LIBRARIES DEPOSITED	VECTOR	ATCC DEPOSIT NO.
HT4C	Uni-ZAP XR	LP03
HE9F HE9H HE9M HE9N HE9O HE9P HE9Q HE9R HE9S HE9T	Uni-ZAP XR	LP13
HEPA HEPB	Uni-ZAP XR	LP04
HSFA	Uni-ZAP XR	LP13
HATA HATB HATC HATE	Uni-ZAP XR	LP13
HT3B	Uni-ZAP XR	PA005 Phage
HSNA	Uni-ZAP XR	LP04
HPFC	Uni-ZAP XR	LP04
HE2A HE2D HE2E HE2H HE2I HE2O	Uni-ZAP XR	LP13
HE2B HE2C HE2F HE2P	Uni-ZAP XR	LP13
HCBB	Uni-ZAP XR	NA
HFGA	Uni-ZAP XR	LP03
HNEA HNED	Uni-ZAP XR	LP13
HBGB	Uni-ZAP XR	LP03
HKCA	Uni-ZAP XR	PA005 Phage
HKLA	Lambda ZAP II	PA005 Phage
HBNA	Uni-ZAP XR	LP03
HCET	pBluescript	PA005 Phage
HKCS HKCU	pBluescript	LP03
HKCT	pBluescript	PA005 Phage
HL1S	pBluescript	LP13
HLHS HLHT	pBluescript	LP13
HPRT	pBluescript	PA005 Phage
HPTT	Uni-ZAP XR	LP13
HRGS	pBluescript	LP03
HSUS	pBluescript	LP13
HT2S	Uni-ZAP XR	NA
HCNS	pBluescript	PA005 Phage
HCNU	pBluescript	PA005 Phage
HKLR	pBluescript	PA005 Phage
HKLS	pBluescript	PA005 Phage
HKTA	Uni-ZAP XR	PA005 Phage
HHFU	pBluescript	NA
HE8S	Uni-ZAP XR	LP03
HCDC HCDE	Uni-ZAP XR	LP03
HOAA	Uni-ZAP XR	LP13
HTLA HTLD HTLE	Uni-ZAP XR	LP03
HLMD	Uni-ZAP XR	PA005 Phage
HLMI HLMM	Lambda Zap II	LP01

LIBRARIES DEPOSITED	VECTOR	ATCC DEPOSIT NO.
H6EA H6EB	Uni-ZAP XR	LP03
HCEV HCEY	Uni-ZAP XR	LP03
HCQA HCQB	Lambda Zap II	LP01
HTOA HTOD HTOH HTOJ	Uni-ZAP XR	LP13
HTXC HTXF	Uni-ZAP XR	LP03
HMEC HMEE HMEG HMEI HMEK	Lambda Zap II	LP01
HMEB	Lambda Zap II	LP13
HNFE HNFF HNFG HNFH	Uni-ZAP XR	LP03
HKEA	ZAP express	PA005 Phage
HMGB	Uni-ZAP XR	LP13
HMHB	Uni-ZAP XR	PA005 Phage
HAUA HAUB	Uni-ZAP XR	LP13
HAQB	Uni-ZAP XR	LP13
HCWH	ZAP express	LP02
HCUC	ZAP express	LP02
HSVB HSVC	Uni-ZAP XR	LP03
HPXA	pBluescript	NA
HBJE HBJF HBJJ HBJM	Uni-ZAP XR	LP13
HCRB	Uni-ZAP XR	LP03
HODA HODB HODC HODD	Uni-ZAP XR	LP13
HDSA	Uni-ZAP XR	LP03
HLQA HLQB	Lambda Zap II	LP01
HHGC HHGD	Lambda Zap II	LP01
HCPA	Uni-ZAP XR	LP13
HMWA HMWB HMWD HMWF HMWH HMWI	Uni-ZAP XR	LP03
HERA	Uni-ZAP XR	LP13
HGLA	Uni-ZAP XR	LP13
HWTB HWTC	Uni-ZAP XR	LP13
HLLC	pCMVSport1	PA005 DNA
HLIB HLIC	pCMVSport1	LP12
HKDB	pCMVSport1	NA
HRKA	pBluescript	PA005 Phage
HOSX	pBluescript	PA005 Phage
HEAA	Uni-ZAP XR	LP13
HBCB HBCC	Uni-ZAP XR	LP21
HHBE HHBF HHBH	pCMVSport1	LP12
HBBB	pCMVSport1	LP12
HLJB HLJD HLJE	pCMVSport1	LP12
HSEB	pCMVSport1	NA
HNAA	pSport1	NA
HBSA	Uni-ZAP XR	LP04
HBBM	pCMVSport1	NA
HADM	pBluescript	NA
HMKA HMKC	pSport1	LP12
HFVH HFVI HFVJ HFVK	pBluescript	LP03
HKIM	Lambda Zap II	PA005 Phage

LIBRARIES DEPOSITED	VECTOR	ATCC DEPOSIT NO.
HCUD HCUE HCUG	ZAP express	LP02
HKIS	pBluescript	NA
HSDS	pBluescript	LP13
HBAG HBAH	pSport1	NA
HUSG HUSI HUSJ	pSport1	LP10
HUSX HUSY HUSZ	pSport1	LP10
HOFM	pCMVSport 2.0	LP07
HNFI	pBluescript	LP03
HBMC HBMD	pBluescript	LP03
HCFB HCFC HCFD	pSport1	LP12
HCFL HCFM HCFN HCFO	pSport1	LP12
HPTW	pBluescript	PA005 Phage
HADC HADF	pSport1	LP10
HOVA HOVC HOVD HOVE	pSport1	LP10
HKML HKMM	pBluescript	LP03
HUSF	pBluescript	NA
HOGA HOGB HOGC HOGD HOGE	pCMVSport 2.0	LP12
HTWB HTWC HTWD HTWE HTWF	pSport1	LP10
HBXF	ZAP express	LP02
HEOA	pBluescript	PA005 DNA
HSDX	pBluescript	LP13
HMMA	pSport1	LP12
HLYA HLYB HLYC HLYD HLYE HLYG	pSport1	LP10
HCGL	pCMVSport 2.0	LP07
HSDZ	pBluescript	LP13
HEON HEOQ HEOS	pSport1	LP10
HCGB	pSport1	LP10
HADT	pBluescript	NA
HTDA	pSport1	LP12
HSPA HSPB	pSport1	LP10
HSPM	pSport1	LP10
HCHA HCHB HCHC	pSport1	LP10
HCHM HCHO	pSport1	LP10
HDLA	pCMVSport 2.0	LP07
HDTA HDTB HDTD HDTE HDTG HDTH HDTI HDTJ HDTK HDTL HDTM	pCMVSport 2.0	LP07
HTJM HTJN	pCMVSport 2.0	LP12
HCIA	pSport1	LP10
H6BS	Uni-ZAP XR	LP03
HKAA HKAB HKAC HKAD HKAE HKAF HKAH HKAJ HKAK HKAO	pCMVSport 2.0	LP07
HDAA HDAB HDAC	pSport1	LP10
HUFA HUFB HUFC HUFD HUFF	pSport1	LP10
HLDB HLDC HLDD	pCMVSport 3.0	LP08

LIBRARIES DEPOSITED	VECTOR	ATCC DEPOSIT NO.
HLDN HLDO	pCMVSport 3.0	LP08
HNDA	pCMVSport 2.0	LP07
HMTA HMTB	pCMVSport 3.0	LP08
HNTA HNTB HNTC HNTD HNTE	pCMVSport 3.0	LP08
HNTM	pSport1	LP10
HDPA HDPB HDPC HDPF HDPG HDPH HDPI HDPJ HDPK HDPL HDPR HDPS HDPT HDPU HDPW HDPX HDQD HDQE HDQF HDQG HDQH	pCMVSport 3.0	LP08
HDPM HDPO HDPP HDPQ HDQP	pCMVSport 3.0	LP08
HMTM	PCRII	LP09
HLDX	pSport1	LP10
HMUB	pCMVSport 3.0	LP08
HULA HULC	pSport1	LP10
HFNA	pSport1	LP10
HKGA HKGB HKGC HKGD	pSport1	LP10
HISA HISB HISC HISD HISE	pSport1	LP10
HLSA	pSport1	LP10
HHEA HHEB HHEC HHED HHEE HHEF HHEG HHEH HHEI HHEJ	pCMVSport 3.0	LP08
HHEM HHEN HHEP HHEQ HHER HHET HHEU HHEV HHEW HHEX HHEY HHEZ	pCMVSport 3.0	LP08
HEQA	pCMVSport 3.0	LP08
HJMA HJMB	pCMVSport 3.0	LP08
HSWB	pCMVSport 3.0	LP08
HNTR HNTS HNTT	pSport1	NA
HEEA	Uni-ZAP XR	NA
HEGA	Uni-ZAP XR	NA
HSYA HSYB HSYD HSYE	pCMVSport 3.0	LP08
HLWA HLWB HLWC	pCMVSport 3.0	LP08
HRAA HRAB HRAC HRAE	pCMVSport 3.0	LP08
HTXJ HTXK HTXL HTXM HTXO HTXP HTXQ HTXR HTXS	Uni-ZAP XR	LP03
H6ED	Uni-ZAP XR	LP03
HAMF HAMG	pCMVSport 3.0	LP12
HAJA HAJB	pCMVSport 3.0	LP12
HDFU	pCMVSport 2.0	NA
HDHE	pCMVSport 2.0	NA
HLQD HLQE HLQF	Lamda ZAP II	LP13

LIBRARIES DEPOSITED	VECTOR	ATCC DEPOSIT NO.
HAPN HAPO HAPQ HAPR	Uni-ZAP XR	LP13
HWBA HWBB HWBC HWBD HWBE HWBF	pCMVSport 3.0	LP12
HWAA HWAB HWAC HWAD HWAG HWAI	pCMVSport 3.0	LP12
HYAA HYAB HYAC	pCMVSport 3.0	LP12
HWHG HWHH	pCMVSport 3.0	LP12
HWHP HWHQ	pCMVSport 3.0	LP12
HCWU	ZAP Exress	LP13
HSIF HSIG	Uni-ZAP XR	PA005 Phage
HLTG HLTH HLTI	Uni-ZAP XR	LP13
HARM HARN	pCMVSport 3.0	LP12
HBIM HBIN HBIO HBIP	pCMVSport 3.0	LP12
HSOB HSOD	Uni-ZAP XR	LP03
HCQC HCQD	Lambda ZAP II	LP01
HCNC HCND	Lambda ZAP II	LP01
HROB HROD	Uni-ZAP XR	LP03
HAHC	Uni-ZAP XR	LP13
HWDA	pCMVSport 3.0	LP12
HODE HODF HODG	Uni-ZAP XR	LP03
HTEL HTEP	Uni-ZAP XR	LP03
HBGM HBGN	Uni-ZAP XR	LP03
HTLG HTLH	Uni-ZAP XR	LP03
HHFJ HHFL HHFM	Uni-ZAP XR	LP03
HFKH HFKI HFKM	Uni-ZAP XR	LP03
HTPF HTPG HTPH HTPI	Uni-ZAP XR	LP03
HUVF HUVG HUVH	Uni-ZAP XR	LP03
HE2J HE2L HE2R HE2T	Uni-ZAP XR	LP04
HS2A	pSport1	LP16
HS2S	pSport1	LP16
HLQG	Lambda Zap II	LP01
HA5A HA5B	pSport1	LP16
HTTI HTTK	Uni-ZAP XR	LP03
HTAH	Uni-ZAP XR	LP03
HDDN	pSport1	LP22
HPCI	Lambda Zap-CMV XR	LP21
HPCR	Lambda Zap-CMV XR	LP22
HPMK HPML	Uni-ZAP XR	LP03
HHFO	Uni-ZAP XR	LP03
HAAA	pSport1	LP22
HOOH	pSport1	LP22
HIDA	pSport1	LP22
HNOA	pSport1	LP22

LIBRARIES DEPOSITED	VECTOR	ATCC DEPOSIT NO.
HUUA	pTrip1Ex2	LP22
HPDO	pSport1	PA005 DNA
HPCO	pSport1	PA005 DNA
HOCM	pSport1	PA005 DNA
HNBT	pSport1	PA005 DNA
HBCJ	pSport1	PA005 DNA
HSAM	pSport1	PA005 DNA
HFXA HFXH	Lambda ZAP II	LP01
HMSA HMSC HMSD HMSF HMSG HMSH HMSI HMSJ	Uni-ZAP XR	LP03
HOSA HOSB HOSD HOSM HOSN HOSO HOSP	Uni ZAP XR	LP04
HEBA HEBB HEBF HEBG	Uni ZAP XR	NA
HAGB HAGD HAGE HAGF	Uni-ZAP XR	LP13
HSRA HSRB	Uni-ZAP XR	LP03
HPVA	Uni ZAP XR	PA005 Phage
HKIA	Uni ZAP XR	PA005 Phage
HKMA	Uni ZAP XR	NA
HSRF	Uni-ZAP XR	LP03
HSQD HSQF	Uni-ZAP XR	LP03
HSKE HSKZ	Uni-ZAP XR	LP03
HSLE HSLF HSLG HSLH	Uni-ZAP XR	LP03
HSDE HSDH	Uni-ZAP XR	LP03
HSXA HSXB HSXD	Uni-ZAP XR	LP04
HSHA HSHB	Uni-ZAP XR	LP13
HBXA HBXB HBXC	ZAP Express	LP13
HOUA HOUD	Uni-ZAP XR	LP04
HPWA HPWB HPWC	Uni-ZAP XR	LP13
HELB HELG HELH	Uni-ZAP XR	LP04
HEMF HEMG	Uni-ZAP XR	LP04
HBIB	Uni-ZAP XR	LP04
HFRA HFRB	Uni ZAP XR	PA005 Phage
HHSB HHSD	Uni-ZAP XR	LP04
HNGB HNGE HNGG HNGI	Uni-ZAP XR	LP04
HNHD HNHE HNHH	Uni-ZAP XR	LP04
HADB	Uni ZAP XR	NA
HSAV HSAW HSAX HSAZ	Uni-ZAP XR	LP04
HBMS HBMT HBMV HBMX	Uni-ZAP XR	LP04
HOBA	pBluescript	PA005 Phage
HOEE HOEF HOEK HOEL HOEM HOEN HOEO	Uni ZAP XR	PA005 Phage
HAIB HAIC HAID	Uni-ZAP XR	LP04
HTGA HTGB	Uni-ZAP XR	LP04
HEIB HEIC	Uni ZAP XR	NA

LIBRARIES DEPOSITED	VECTOR	ATCC DEPOSIT NO.
HMCD	Uni-ZAP XR	LP04
HPCA	Uni ZAP XR	NA
HPHA	Uni-ZAP XR	LP04
HPIA HPIC	Uni-ZAP XR	LP13
HPJA HPJB HPJC HPJE	Uni-ZAP XR	LP13
HFIA HFIB HFIC	pSport1	LP10
HFIH HFII HFIJ	pSport1	LP10
HFIU	pSport1	LP10
HSKX	pBluescript	LP03
HGCO	pSport1	NA
HMVA HMVB HMVC HMVD	pSport1	LP10
HOSE HOSF	Uni-ZAP XR	LP04
HNHN HNHO	Uni ZAP XR	LP04
HTGE HTGF	Uni-ZAP XR	LP04
HFPB HFPC HFPE HFPF HFPH HFPI HFPJ HFPK	Uni-ZAP XR	LP03
HFIX HFIY HFIZ	pSport1	LP10
HOHA HOHB HOHC HOHE	pCMVSport 2.0	LP07
HSDJ HSDK	Uni-ZAP XR	LP03
HFOX HFOY	pSport1	LP10
HMAH HMAJ HMAK HMAM	Uni-ZAP XR	LP04
HACB HACC	Uni-ZAP XR	LP04
HFXK	Lambda ZAP II	PA005 Phage
HFAT	Uni ZAP XR	PA005 Phage
HANG	pSport1	NA
HOUH	Uni ZAP XR	NA
HMCF HMCG HMCH HMCI	Uni-ZAP XR	LP13
HWLE HWLF HWLG HWLH HWMA	pSport1	LP14
HCRM HCRN HCRO HCRP HCRQ	pSport1	LP14
HWLI HWLJ HWLK HWLL HWMF	pSport1	LP14
HWLQ HWLR HWLU HWLV HWLW HWLX	pSport1	LP14
HBOD HBOE	pSport1	LP14
HBKD	pSport1	LP14
HWLA HWLC HWLD HWLP	pSport1	LP14
HWLM HWLN HWLO HWMB HWMC	pSport1	LP14
HVAA	pSport1	LP12
HBWC	ZAP express	LP13
HHSF HHSG	Uni ZAP XR	LP04
HSLJ	Uni ZAP XR	NA
HAQN	pSport1	LP14
HASM	pSport1	LP14
HCDM	pSport1	LP14
HFDM	pSport1	LP14
HGAM	pSport1	LP14
HHMM	pSport1	LP14
HAVM	pT-Adv	LP14
HAVT	pT-Adv	LP14
HHAT HHAU	pT-Adv	LP14
HUCN HUCO HUCP HUCQ	pSport1	LP20
HHAO	pCMVSport	LP15

LIBRARIES DEPOSITED	VECTOR	ATCC DEPOSIT NO.
	3.0	
HTFN	pSport1	LP16
HMSM HMSO HMSP	Uni ZAP XR	PA005 Phage
HEPN	pSport1	LP20
HPSN	pSport1	LP20
HNSA	pSport1	LP20
HNSM	pSport1	LP20
HOCN	pSport1	LP20
HOCT	pSport1	LP20
HLXN	pSport1	LP20
HTYN	pSport1	LP20
HZAA	pSport1	LP20
HINA	pSport1	LP16
HRMA	pSport1	LP16
HSKI HSKJ HSKK	pBluescript	LP03
HACA	Uni-ZAP XR	LP13
HFAA HFAC HFAD	Uni-ZAP XR	LP04
HFAM	Uni-ZAP XR	LP04
HMIA HMIB	Uni-ZAP XR	LP04
HILB HILC	pBluescript SK-	PA005 Phage
HPBE	pBluescript SK-	LP13
HIBC HIBE	Other	NA
HPDD	pBluescript SK-	NA
HSAA HSAB HSAC	pBluescript	LP05
HSBA	pBluescript SK-	LP13
HJAA HJAC	pBluescript SK-	LP13
HJBA HJBC	pBluescript SK-	LP13
HAFB	pBS	LP05
HTNA HTNB	pBluescript SK-	LP13
HONA	pBluescript	LP05
HBMA	pBluescript SK-	NA
HARA	pBluescript	LP05
H2CA	pBluescript SK-	NA
H2MA	pBluescript SK-	NA
H2MB H2MC	pBluescript SK-	PA005 Phage
H2CB	pBluescript SK-	PA005 Phage
HCYA	pBluescript SK-	NA
HCYB	pBluescript	PA005

LIBRARIES DEPOSITED	VECTOR	ATCC DEPOSIT NO.
	SK-	Phage
H2LA H2LB	pBluescript SK-	PA005 Phage

In many cases, the vector used to construct the library is a phage vector from which a plasmid has been excised. The table immediately below correlates the related plasmid for each phage vector used in constructing the cDNA library. For example, where a particular clone is identified in Table 1 as being isolated in the vector "Lambda Zap," the corresponding deposited clone is in "pBluescript."

Vector Used to Construct Library	Corresponding Deposited Plasmid
Lambda Zap	pBluescript (pBS)
Uni-Zap XR	pBluescript (pBS)
Zap Express	pBK
lafmid BA	plafmid BA
pSport1	pSport1
pCMVSport 2.0	pCMVSport 2.0
pCMVSport 3.0	pCMVSport 3.0
pCR®2.1	pCR®2.1

Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., Nucleic Acids Res. 16:7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., Nucleic Acids Res. 17:9494 (1989)) and pBK (Alting-Mees, M. A. et al., Strategies 5:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Both can be transformed into E. coli strain XL-1 Blue, also available from Stratagene. pBS comes in 4 forms SK+, SK-, KS+ and KS. The S and K refers to the orientation of the polylinker to the T7 and T3 primer sequences which flank the polylinker region ("S" is for SacI and "K" is for KpnI which are the first sites on each respective end of the linker). "+" or "-" refer to the orientation of the f1 origin of replication ("ori"), such that in one orientation, single stranded rescue initiated from the f1 ori generates sense strand DNA and in the other, antisense.

Vectors pSport1, pCMVSport 2.0 and pCMVSport 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into E. coli strain DH10B, also available from Life Technologies. (See, for instance, Gruber, C. E., et al., Focus 15:59 (1993).)

Vector lafmid BA (Bento Soares, Columbia University, NY) contains an ampicillin resistance gene and can be transformed into E. coli strain XL-1 Blue. Vector pCR®2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into E. coli strain DH10B, available from Life Technologies. (See, for instance, Clark, J. M., Nuc. Acids Res. 16:9677-9686 (1988) and Mead, D. et al., Bio/Technology 9: (1991).) Preferably, a polynucleotide of the present invention does not comprise the phage vector sequences identified for the particular clone in Table 1, as well as the corresponding plasmid vector sequences designated above.

The deposited material in the sample assigned the ATCC Deposit Number cited in Table 2 for any given cDNA clone also may contain one or more additional plasmids, each comprising a cDNA clone different from that given clone. Thus, deposits sharing the same ATCC Deposit Number contain at least a plasmid for each cDNA clone identified in Table 1. Typically, each ATCC deposit sample cited in Table 2 comprises a mixture of approximately equal amounts (by weight) of about 50 plasmid DNAs, each containing a different cDNA clone; but such a deposit sample may include plasmids for more or less than 50 cDNA clones, up to about 500 cDNA clones.

Two approaches can be used to isolate a particular clone from the deposited sample of plasmid DNAs cited for that library in Table 2 and 9. First, a plasmid is directly isolated by screening the libraries using a polynucleotide probe corresponding to SEQ ID NO:X.

Particularly, a specific polynucleotide with 30-40 nucleotides is synthesized using an Applied Biosystems DNA synthesizer according to the sequence reported. The oligonucleotide is labeled, for instance, with ^{32}P-γ-ATP using T4 polynucleotide kinase and purified according to routine methods. (E.g., Maniatis et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Press, Cold Spring, NY (1982).) The plasmid mixture is transformed into a suitable host, as indicated above (such as XL-1 Blue (Stratagene)) using techniques known to those of skill in the art, such as those provided by the vector supplier or in related publications or patents cited above. The transformants are plated on 1.5% agar plates (containing the appropriate selection agent, e.g., ampicillin) to a density of about 150 transformants (colonies) per plate. These plates are screened using Nylon membranes according to routine methods for bacterial colony screening (e.g., Sambrook et al., Molecular Cloning: A Laboratory Manual, 2nd Edit., (1989), Cold Spring

Harbor Laboratory Press, pages 1.93 to 1.104), or other techniques known to those of skill in the art.

Alternatively, two primers of 17-20 nucleotides derived from both ends of the SEQ ID NO:X (i.e., within the region of SEQ ID NO:X bounded by the 5' NT and the 3' NT of the clone defined in Table 1) are synthesized and used to amplify the desired cDNA using the deposited cDNA plasmid as a template. The polymerase chain reaction is carried out under routine conditions, for instance, in 25 μl of reaction mixture with 0.5 ug of the above cDNA template. A convenient reaction mixture is 1.5-5 mM $MgCl_2$, 0.01% (w/v) gelatin, 20 μM each of dATP, dCTP, dGTP, dTTP, 25 pmol of each primer and 0.25 Unit of Taq polymerase. Thirty five cycles of PCR (denaturation at 94°C for 1 min; annealing at 55°C for 1 min; elongation at 72°C for 1 min) are performed with a Perkin-Elmer Cetus automated thermal cycler. The amplified product is analyzed by agarose gel electrophoresis and the DNA band with expected molecular weight is excised and purified. The PCR product is verified to be the selected sequence by subcloning and sequencing the DNA product.

Several methods are available for the identification of the 5' or 3' non-coding portions of a gene which may not be present in the deposited clone. These methods include but are not limited to, filter probing, clone enrichment using specific probes, and protocols similar or identical to 5' and 3' "RACE" protocols which are well known in the art. For instance, a method similar to 5' RACE is available for generating the missing 5' end of a desired full-length transcript. (Fromont-Racine et al., Nucleic Acids Res. 21(7):1683-1684 (1993).)

Briefly, a specific RNA oligonucleotide is ligated to the 5' ends of a population of RNA presumably containing full-length gene RNA transcripts. A primer set containing a primer specific to the ligated RNA oligonucleotide and a primer specific to a known sequence of the gene of interest is used to PCR amplify the 5' portion of the desired full-length gene. This amplified product may then be sequenced and used to generate the full length gene.

This above method starts with total RNA isolated from the desired source, although poly-A+ RNA can be used. The RNA preparation can then be treated with phosphatase if necessary to eliminate 5' phosphate groups on degraded or damaged RNA which may interfere with the later RNA ligase step. The phosphatase should then be inactivated and the RNA treated with tobacco acid pyrophosphatase in order to remove the cap structure present at the 5' ends of messenger RNAs. This reaction leaves a 5' phosphate group at the 5' end of

the cap cleaved RNA which can then be ligated to an RNA oligonucleotide using T4 RNA ligase.

This modified RNA preparation is used as a template for first strand cDNA synthesis using a gene specific oligonucleotide. The first strand synthesis reaction is used as a template for PCR amplification of the desired 5' end using a primer specific to the ligated RNA oligonucleotide and a primer specific to the known sequence of the gene of interest. The resultant product is then sequenced and analyzed to confirm that the 5' end sequence belongs to the desired gene.

Example 2: Isolation of Genomic Clones Corresponding to a Polynucleotide

A human genomic P1 library (Genomic Systems, Inc.) is screened by PCR using primers selected for the cDNA sequence corresponding to SEQ ID NO:X., according to the method described in Example 1. (See also, Sambrook.)

Example 3: Tissue specific expression analysis

The Human Genome Sciences, Inc. (HGS) database is derived from sequencing tissue specific cDNA libraries. Libraries generated from a particular tissue (e.g., those shown in Table 3 and 5) are selected and the specific tissue expression pattern of EST groups or assembled contigs within these libraries is determined by comparison of the expression patterns of those groups or contigs within the entire database. ESTs which are predicted to have significantly enhances expression in colon or colon cancer tissues were selected.

The original clone from which the specific EST sequence was generated, is obtained from the catalogued library of clones and the insert amplified by PCR using methods known in the art. The PCR product is denatured then transferred in 96 well format to a nylon membrane (Schleicher and Scheull) generating an array filter of colon and/or colon cancer related clones. Housekeeping genes, maize genes, known tissue specific genes and known membrane localized class I genes are included on the filters as controls. These targets can be used in signal normalization and to validate assay sensitivity. Additional targets are included to monitor probe length and specificity of hybridization.

Radioactively labeled hybridization probes are generated by first strand cDNA synthesis per the manufacturer's instructions (Life Technologies) from mRNA/RNA samples prepared from the specific tissue being analyzed. The hybridization probes are purified by gel exclusion chromatography, quantitated, and hybridized with the array filters in hybridization bottles at 65°C overnight. The filters are washed under stringent conditions and signals are captured using a Fuji phosphorimager.

Data is extracted using AIS software and following background subtraction, signal normalization is performed. This includes a normalization of filter-wide expression levels between different experimental runs. Genes that are differentially expressed in the tissue of interest are identified and the full length sequence of these clones is generated.

Example 4: Chromosomal Mapping of the Polynucleotides

An oligonucleotide primer set is designed according to the sequence at the 5' end of SEQ ID NO:X. This primer preferably spans about 100 nucleotides. This primer set is then used in a polymerase chain reaction under the following set of conditions : 30 seconds, 95°C; 1 minute, 56°C; 1 minute, 70°C. This cycle is repeated 32 times followed by one 5 minute cycle at 70°C. Human, mouse, and hamster DNA is used as template in addition to a somatic cell hybrid panel containing individual chromosomes or chromosome fragments (Bios, Inc). The reactions is analyzed on either 8% polyacrylamide gels or 3.5 % agarose gels. Chromosome mapping is determined by the presence of an approximately 100 bp PCR fragment in the particular somatic cell hybrid.

Example 5: Bacterial Expression of a Polypeptide

A polynucleotide encoding a polypeptide of the present invention is amplified using PCR oligonucleotide primers corresponding to the 5' and 3' ends of the DNA sequence, as outlined in Example 1, to synthesize insertion fragments. The primers used to amplify the cDNA insert should preferably contain restriction sites, such as BamHI and XbaI, at the 5' end of the primers in order to clone the amplified product into the expression vector. For example, BamHI and XbaI correspond to the restriction enzyme sites on the bacterial

expression vector pQE-9. (Qiagen, Inc., Chatsworth, CA). This plasmid vector encodes antibiotic resistance (Ampr), a bacterial origin of replication (ori), an IPTG-regulatable promoter/operator (P/O), a ribosome binding site (RBS), a 6-histidine tag (6-His), and restriction enzyme cloning sites.

The pQE-9 vector is digested with BamHI and XbaI and the amplified fragment is ligated into the pQE-9 vector maintaining the reading frame initiated at the bacterial RBS. The ligation mixture is then used to transform the E. coli strain M15/rep4 (Qiagen, Inc.) which contains multiple copies of the plasmid pREP4, which expresses the lacI repressor and also confers kanamycin resistance (Kanr). Transformants are identified by their ability to grow on LB plates and ampicillin/kanamycin resistant colonies are selected. Plasmid DNA is isolated and confirmed by restriction analysis.

Clones containing the desired constructs are grown overnight (O/N) in liquid culture in LB media supplemented with both Amp (100 ug/ml) and Kan (25 ug/ml). The O/N culture is used to inoculate a large culture at a ratio of 1:100 to 1:250. The cells are grown to an optical density 600 (O.D.^{600}) of between 0.4 and 0.6. IPTG (Isopropyl-B-D-thiogalacto pyranoside) is then added to a final concentration of 1 mM. IPTG induces by inactivating the lacI repressor, clearing the P/O leading to increased gene expression.

Cells are grown for an extra 3 to 4 hours. Cells are then harvested by centrifugation (20 mins at 6000Xg). The cell pellet is solubilized in the chaotropic agent 6 Molar Guanidine HCl by stirring for 3-4 hours at 4°C. The cell debris is removed by centrifugation, and the supernatant containing the polypeptide is loaded onto a nickel-nitrilo-tri-acetic acid ("Ni-NTA") affinity resin column (available from QIAGEN, Inc., *supra*). Proteins with a 6 x His tag bind to the Ni-NTA resin with high affinity and can be purified in a simple one-step procedure (for details see: The QIAexpressionist (1995) QIAGEN, Inc., *supra*).

Briefly, the supernatant is loaded onto the column in 6 M guanidine-HCl, pH 8, the column is first washed with 10 volumes of 6 M guanidine-HCl, pH 8, then washed with 10 volumes of 6 M guanidine-HCl pH 6, and finally the polypeptide is eluted with 6 M guanidine-HCl, pH 5.

The purified protein is then renatured by dialyzing it against phosphate-buffered saline (PBS) or 50 mM Na-acetate, pH 6 buffer plus 200 mM NaCl. Alternatively, the protein can be successfully refolded while immobilized on the Ni-NTA column. The recommended conditions are as follows: renature using a linear 6M-1M urea gradient in 500

mM NaCl, 20% glycerol, 20 mM Tris/HCl pH 7.4, containing protease inhibitors. The renaturation should be performed over a period of 1.5 hours or more. After renaturation the proteins are eluted by the addition of 250 mM immidazole. Immidazole is removed by a final dialyzing step against PBS or 50 mM sodium acetate pH 6 buffer plus 200 mM NaCl. The purified protein is stored at 4° C or frozen at -80° C.

In addition to the above expression vector, the present invention further includes an expression vector comprising phage operator and promoter elements operatively linked to a polynucleotide of the present invention, called pHE4a. (ATCC Accession Number 209645, deposited on February 25, 1998.) This vector contains: 1) a neomycinphosphotransferase gene as a selection marker, 2) an E. coli origin of replication, 3) a T5 phage promoter sequence, 4) two lac operator sequences, 5) a Shine-Delgarno sequence, and 6) the lactose operon repressor gene (lacIq). The origin of replication (oriC) is derived from pUC19 (LTI, Gaithersburg, MD). The promoter sequence and operator sequences are made synthetically.

DNA can be inserted into the pHEa by restricting the vector with NdeI and XbaI, BamHI, XhoI, or Asp718, running the restricted product on a gel, and isolating the larger fragment (the stuffer fragment should be about 310 base pairs). The DNA insert is generated according to the PCR protocol described in Example 1, using PCR primers having restriction sites for NdeI (5' primer) and XbaI, BamHI, XhoI, or Asp718 (3' primer). The PCR insert is gel purified and restricted with compatible enzymes. The insert and vector are ligated according to standard protocols.

The engineered vector could easily be substituted in the above protocol to express protein in a bacterial system.

Example 6: Purification of a Polypeptide from an Inclusion Body

The following alternative method can be used to purify a polypeptide expressed in *E coli* when it is present in the form of inclusion bodies. Unless otherwise specified, all of the following steps are conducted at 4-10°C.

Upon completion of the production phase of the *E. coli* fermentation, the cell culture is cooled to 4-10°C and the cells harvested by continuous centrifugation at 15,000 rpm (Heraeus Sepatech). On the basis of the expected yield of protein per unit weight of cell paste and the amount of purified protein required, an appropriate amount of cell paste, by

weight, is suspended in a buffer solution containing 100 mM Tris, 50 mM EDTA, pH 7.4. The cells are dispersed to a homogeneous suspension using a high shear mixer.

The cells are then lysed by passing the solution through a microfluidizer (Microfuidics, Corp. or APV Gaulin, Inc.) twice at 4000-6000 psi. The homogenate is then mixed with NaCl solution to a final concentration of 0.5 M NaCl, followed by centrifugation at 7000 xg for 15 min. The resultant pellet is washed again using 0.5M NaCl, 100 mM Tris, 50 mM EDTA, pH 7.4.

The resulting washed inclusion bodies are solubilized with 1.5 M guanidine hydrochloride (GuHCl) for 2-4 hours. After 7000 xg centrifugation for 15 min., the pellet is discarded and the polypeptide containing supernatant is incubated at 4°C overnight to allow further GuHCl extraction.

Following high speed centrifugation (30,000 xg) to remove insoluble particles, the GuHCl solubilized protein is refolded by quickly mixing the GuHCl extract with 20 volumes of buffer containing 50 mM sodium, pH 4.5, 150 mM NaCl, 2 mM EDTA by vigorous stirring. The refolded diluted protein solution is kept at 4°C without mixing for 12 hours prior to further purification steps.

To clarify the refolded polypeptide solution, a previously prepared tangential filtration unit equipped with 0.16 μm membrane filter with appropriate surface area (e.g., Filtron), equilibrated with 40 mM sodium acetate, pH 6.0 is employed. The filtered sample is loaded onto a cation exchange resin (e.g., Poros HS-50, Perseptive Biosystems). The column is washed with 40 mM sodium acetate, pH 6.0 and eluted with 250 mM, 500 mM, 1000 mM, and 1500 mM NaCl in the same buffer, in a stepwise manner. The absorbance at 280 nm of the effluent is continuously monitored. Fractions are collected and further analyzed by SDS-PAGE.

Fractions containing the polypeptide are then pooled and mixed with 4 volumes of water. The diluted sample is then loaded onto a previously prepared set of tandem columns of strong anion (Poros HQ-50, Perseptive Biosystems) and weak anion (Poros CM-20, Perseptive Biosystems) exchange resins. The columns are equilibrated with 40 mM sodium acetate, pH 6.0. Both columns are washed with 40 mM sodium acetate, pH 6.0, 200 mM NaCl. The CM-20 column is then eluted using a 10 column volume linear gradient ranging from 0.2 M NaCl, 50 mM sodium acetate, pH 6.0 to 1.0 M NaCl, 50 mM sodium acetate, pH

6.5. Fractions are collected under constant A_{280} monitoring of the effluent. Fractions containing the polypeptide (determined, for instance, by 16% SDS-PAGE) are then pooled.

The resultant polypeptide should exhibit greater than 95% purity after the above refolding and purification steps. No major contaminant bands should be observed from Commassie blue stained 16% SDS-PAGE gel when 5 μg of purified protein is loaded. The purified protein can also be tested for endotoxin/LPS contamination, and typically the LPS content is less than 0.1 ng/ml according to LAL assays.

Example 7: Cloning and Expression of a Polypeptide in a Baculovirus Expression System

In this example, the plasmid shuttle vector pA2 is used to insert a polynucleotide into a baculovirus to express a polypeptide. This expression vector contains the strong polyhedrin promoter of the *Autographa californica* nuclear polyhedrosis virus (AcMNPV) followed by convenient restriction sites such as BamHI, Xba I and Asp718. The polyadenylation site of the simian virus 40 ("SV40") is used for efficient polyadenylation. For easy selection of recombinant virus, the plasmid contains the beta-galactosidase gene from *E. coli* under control of a weak Drosophila promoter in the same orientation, followed by the polyadenylation signal of the polyhedrin gene. The inserted genes are flanked on both sides by viral sequences for cell-mediated homologous recombination with wild-type viral DNA to generate a viable virus that express the cloned polynucleotide.

Many other baculovirus vectors can be used in place of the vector above, such as pAc373, pVL941, and pAcIM1, as one skilled in the art would readily appreciate, as long as the construct provides appropriately located signals for transcription, translation, secretion and the like, including a signal peptide and an in-frame AUG as required. Such vectors are described, for instance, in Luckow et al., Virology 170:31-39 (1989).

Specifically, the cDNA sequence contained in the deposited clone, including the AUG initiation codon, is amplified using the PCR protocol described in Example 1. If a naturally occurring signal sequence is used to produce a colon or colon cancer related polypeptide, the pA2 vector does not need a second signal peptide. Alternatively, the vector can be modified (pA2 GP) to include a baculovirus leader sequence, using the standard methods described in Summers et al., “A Manual of Methods for Baculovirus Vectors and

Insect Cell Culture Procedures," Texas Agricultural Experimental Station Bulletin No. 1555 (1987).

The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("Geneclean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

The plasmid is digested with the corresponding restriction enzymes and optionally, can be dephosphorylated using calf intestinal phosphatase, using routine procedures known in the art. The DNA is then isolated from a 1% agarose gel using a commercially available kit ("Geneclean" BIO 101 Inc., La Jolla, Ca.).

The fragment and the dephosphorylated plasmid are ligated together with T4 DNA ligase. *E. coli* HB101 or other suitable *E. coli* hosts such as XL-1 Blue (Stratagene Cloning Systems, La Jolla, CA) cells are transformed with the ligation mixture and spread on culture plates. Bacteria containing the plasmid are identified by digesting DNA from individual colonies and analyzing the digestion product by gel electrophoresis. The sequence of the cloned fragment is confirmed by DNA sequencing.

Five μg of a plasmid containing the polynucleotide is co-transfected with 1.0 μg of a commercially available linearized baculovirus DNA ("BaculoGold™ baculovirus DNA", Pharmingen, San Diego, CA), using the lipofection method described by Felgner et al., Proc. Natl. Acad. Sci. USA 84:7413-7417 (1987). One μg of BaculoGold™ virus DNA and 5 μg of the plasmid are mixed in a sterile well of a microtiter plate containing 50 μl of serum-free Grace's medium (Life Technologies Inc., Gaithersburg, MD). Afterwards, 10 μl Lipofectin plus 90 μl Grace's medium are added, mixed and incubated for 15 minutes at room temperature. Then the transfection mixture is added drop-wise to Sf9 insect cells (ATCC CRL 1711) seeded in a 35 mm tissue culture plate with 1 ml Grace's medium without serum. The plate is then incubated for 5 hours at 27° C. The transfection solution is then removed from the plate and 1 ml of Grace's insect medium supplemented with 10% fetal calf serum is added. Cultivation is then continued at 27° C for four days.

After four days the supernatant is collected and a plaque assay is performed, as described by Summers and Smith, *supra*. An agarose gel with "Blue Gal" (Life Technologies Inc., Gaithersburg) is used to allow easy identification and isolation of gal-expressing clones, which produce blue-stained plaques. (A detailed description of a "plaque assay" of this type can also be found in the user's guide for insect cell culture and baculovirology distributed by

Life Technologies Inc., Gaithersburg, page 9- 10.) After appropriate incubation, blue stained plaques are picked with the tip of a micropipettor (e.g., Eppendorf). The agar containing the recombinant viruses is then resuspended in a microcentrifuge tube containing 200 μl of Grace's medium and the suspension containing the recombinant baculovirus is used to infect Sf9 cells seeded in 35 mm dishes. Four days later the supernatants of these culture dishes are harvested and then they are stored at 4° C.

To verify the expression of the polypeptide, Sf9 cells are grown in Grace's medium supplemented with 10% heat-inactivated FBS. The cells are infected with the recombinant baculovirus containing the polynucleotide at a multiplicity of infection ("MOI") of about 2. If radiolabeled proteins are desired, 6 hours later the medium is removed and is replaced with SF900 II medium minus methionine and cysteine (available from Life Technologies Inc., Rockville, MD). After 42 hours, 5 μCi of ^{35}S-methionine and 5 μCi ^{35}S-cysteine (available from Amersham) are added. The cells are further incubated for 16 hours and then are harvested by centrifugation. The proteins in the supernatant as well as the intracellular proteins are analyzed by SDS-PAGE followed by autoradiography (if radiolabeled).

Microsequencing of the amino acid sequence of the amino terminus of purified protein may be used to determine the amino terminal sequence of the produced protein.

Example 8: Expression of a Polypeptide in Mammalian Cells

The polypeptide of the present invention can be expressed in a mammalian cell. A typical mammalian expression vector contains a promoter element, which mediates the initiation of transcription of mRNA, a protein coding sequence, and signals required for the termination of transcription and polyadenylation of the transcript. Additional elements include enhancers, Kozak sequences and intervening sequences flanked by donor and acceptor sites for RNA splicing. Highly efficient transcription is achieved with the early and late promoters from SV40, the long terminal repeats (LTRs) from Retroviruses, e.g., RSV, HTLVI, HIVI and the early promoter of the cytomegalovirus (CMV). However, cellular elements can also be used (e.g., the human actin promoter).

Suitable expression vectors for use in practicing the present invention include, for example, vectors such as pSVL and pMSG (Pharmacia, Uppsala, Sweden), pRSVcat (ATCC 37152), pSV2dhfr (ATCC 37146), pBC12MI (ATCC 67109), pCMVSport 2.0, and

pCMVSport 3.0. Mammalian host cells that could be used include, human Hela, 293, H9 and Jurkat cells, mouse NIH3T3 and C127 cells, Cos 1, Cos 7 and CV1, quail QC1-3 cells, mouse L cells and Chinese hamster ovary (CHO) cells.

Alternatively, the polypeptide can be expressed in stable cell lines containing the polynucleotide integrated into a chromosome. The co-transfection with a selectable marker such as DHFR, gpt, neomycin, hygromycin allows the identification and isolation of the transfected cells.

The transfected gene can also be amplified to express large amounts of the encoded protein. The DHFR (dihydrofolate reductase) marker is useful in developing cell lines that carry several hundred or even several thousand copies of the gene of interest. (See, e.g., Alt, F. W., et al., J. Biol. Chem. 253:1357-1370 (1978); Hamlin, J. L. and Ma, C., Biochem. et Biophys. Acta, 1097:107-143 (1990); Page, M. J. and Sydenham, M. A., Biotechnology 9:64-68 (1991).) Another useful selection marker is the enzyme glutamine synthase (GS) (Murphy et al., Biochem J. 227:277-279 (1991); Bebbington et al., Bio/Technology 10:169-175 (1992). Using these markers, the mammalian cells are grown in selective medium and the cells with the highest resistance are selected. These cell lines contain the amplified gene(s) integrated into a chromosome. Chinese hamster ovary (CHO) and NSO cells are often used for the production of proteins.

Derivatives of the plasmid pSV2-dhfr (ATCC Accession No. 37146), the expression vectors pC4 (ATCC Accession No. 209646) and pC6 (ATCC Accession No.209647) contain the strong promoter (LTR) of the Rous Sarcoma Virus (Cullen et al., Molecular and Cellular Biology, 438-447 (March, 1985)) plus a fragment of the CMV-enhancer (Boshart et al., Cell 41:521-530 (1985).) Multiple cloning sites, e.g., with the restriction enzyme cleavage sites BamHI, XbaI and Asp718, facilitate the cloning of the gene of interest. The vectors also contain the 3' intron, the polyadenylation and termination signal of the rat preproinsulin gene, and the mouse DHFR gene under control of the SV40 early promoter.

Specifically, the plasmid pC6, for example, is digested with appropriate restriction enzymes and then dephosphorylated using calf intestinal phosphates by procedures known in the art. The vector is then isolated from a 1% agarose gel.

A polynucleotide of the present invention is amplified according to the protocol outlined in Example 1. If a naturally occurring signal sequence is used to produce the colon or colon cancer related polypeptide, the vector does not need a second signal peptide.

Alternatively, if a naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., WO 96/34891.)

The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("Geneclean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

The amplified fragment is then digested with the same restriction enzyme and purified on a 1% agarose gel. The isolated fragment and the dephosphorylated vector are then ligated with T4 DNA ligase. *E. coli* HB101 or XL-1 Blue cells are then transformed and bacteria are identified that contain the fragment inserted into plasmid pC6 using, for instance, restriction enzyme analysis.

Chinese hamster ovary cells lacking an active DHFR gene is used for transfection. Five μg of the expression plasmid pC6 or pC4 is cotransfected with 0.5 μg of the plasmid pSVneo using lipofectin (Felgner et al., *supra*). The plasmid pSV2-neo contains a dominant selectable marker, the *neo* gene from Tn5 encoding an enzyme that confers resistance to a group of antibiotics including G418. The cells are seeded in alpha minus MEM supplemented with 1 mg/ml G418. After 2 days, the cells are trypsinized and seeded in hybridoma cloning plates (Greiner, Germany) in alpha minus MEM supplemented with 10, 25, or 50 ng/ml of metothrexate plus 1 mg/ml G418. After about 10-14 days single clones are trypsinized and then seeded in 6-well petri dishes or 10 ml flasks using different concentrations of methotrexate (50 nM, 100 nM, 200 nM, 400 nM, 800 nM). Clones growing at the highest concentrations of methotrexate are then transferred to new 6-well plates containing even higher concentrations of methotrexate (1 μM, 2 μM, 5 μM, 10 mM, 20 mM). The same procedure is repeated until clones are obtained which grow at a concentration of 100 - 200 μM. Expression of the desired gene product is analyzed, for instance, by SDS-PAGE and Western blot or by reversed phase HPLC analysis.

Example 9: Protein Fusions

The polypeptides of the present invention are preferably fused to other proteins. These fusion proteins can be used for a variety of applications. For example, fusion of the present polypeptides to His-tag, HA-tag, protein A, IgG domains, and maltose binding protein facilitates purification. (See Example 5; see also EP A 394,827; Traunecker, et al.,

Nature 331:84-86 (1988).) Similarly, fusion to IgG-1, IgG-3, and albumin increases the halflife time in vivo. Nuclear localization signals fused to the polypeptides of the present invention can target the protein to a specific subcellular localization, while covalent heterodimer or homodimers can increase or decrease the activity of a fusion protein. Fusion proteins can also create chimeric molecules having more than one function. Finally, fusion proteins can increase solubility and/or stability of the fused protein compared to the non-fused protein. All of the types of fusion proteins described above can be made by modifying the following protocol, which outlines the fusion of a polypeptide to an IgG molecule, or the protocol described in Example 5.

Briefly, the human Fc portion of the IgG molecule can be PCR amplified, using primers that span the 5' and 3' ends of the sequence described below. These primers also should have convenient restriction enzyme sites that will facilitate cloning into an expression vector, preferably a mammalian expression vector.

For example, if pC4 (Accession No. 209646) is used, the human Fc portion can be ligated into the BamHI cloning site. Note that the 3' BamHI site should be destroyed. Next, the vector containing the human Fc portion is re-restricted with BamHI, linearizing the vector, and a polynucleotide of the present invention, isolated by the PCR protocol described in Example 1, is ligated into this BamHI site. Note that the polynucleotide is cloned without a stop codon, otherwise a fusion protein will not be produced.

If the naturally occurring signal sequence is used to produce the colon or colon cancer related polypeptide, pC4 does not need a second signal peptide. Alternatively, if the naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., WO 96/34891.)

Human IgG Fc region:
GGGATCCGGAGCCCAAATCTTCTGACAAAACTCACACATGCCCACCGTGCCCAG
CACCTGAATTCGAGGGTGCACCGTCAGTCTTCCTCTTCCCCCCAAAACCCAAGGA
CACCCTCATGATCTCCCGGACTCCTGAGGTCACATGCGTGGTGGTGGACGTAAGC
CACGAAGACCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTGCAT
AATGCCAAGACAAAGCCGCGGGAGGAGCAGTACAACAGCACGTACCGTGTGGTC
AGCGTCCTCACCGTCCTGCACCAGGACTGGCTGAATGGCAAGGAGTACAAGTGC
AAGGTCTCCAACAAAGCCCTCCCAACCCCCATCGAGAAAACCATCTCCAAAGCC

AAAGGGCAGCCCCGAGAACCACAGGTGTACACCCTGCCCCCATCCCGGGATGAG
CTGACCAAGAACCAGGTCAGCCTGACCTGCCTGGTCAAAGGCTTCTATCCAAGC
GACATCGCCGTGGAGTGGGAGAGCAATGGGCAGCCGGAGAACAACTACAAGAC
CACGCCTCCCGTGCTGGACTCCGACGGCTCCTTCTTCCTCTACAGCAAGCTCACC
GTGGACAAGAGCAGGTGGCAGCAGGGGAACGTCTTCTCATGCTCCGTGATGCAT
GAGGCTCTGCACAACCACTACACGCAGAAGAGCCTCTCCCTGTCTCCGGGTAAAT
GAGTGCGACGGCCGCGACTCTAGAGGAT (SEQ ID NO:8555)

Example 10: Production of an Antibody from a Polypeptide

a) Hybridoma Technology

The antibodies of the present invention can be prepared by a variety of methods. (See, Current Protocols, Chapter 2.) As one example of such methods, cells expressing polypeptide of the present invention are administered to an animal to induce the production of sera containing polyclonal antibodies. In a preferred method, a preparation of polypeptide of the present invention is prepared and purified to render it substantially free of natural contaminants. Such a preparation is then introduced into an animal in order to produce polyclonal antisera of greater specific activity.

Monoclonal antibodies specific for polypeptide of the present invention are prepared using hybridoma technology. (Kohler et al., Nature 256:495 (1975); Kohler et al., Eur. J. Immunol. 6:511 (1976); Kohler et al., Eur. J. Immunol. 6:292 (1976); Hammerling et al., in: Monoclonal Antibodies and T-Cell Hybridomas, Elsevier, N.Y., pp. 563-681 (1981)). In general, an animal (preferably a mouse) is immunized with polypeptide of the present invention or, more preferably, with a secreted polypeptide of the present invention-expressing cell. Such polypeptide-expressing cells are cultured in any suitable tissue culture medium, preferably in Earle's modified Eagle's medium supplemented with 10% fetal bovine serum (inactivated at about 56°C), and supplemented with about 10 g/l of nonessential amino acids, about 1,000 U/ml of penicillin, and about 100 μg/ml of streptomycin.

The splenocytes of such mice are extracted and fused with a suitable myeloma cell line. Any suitable myeloma cell line may be employed in accordance with the present invention; however, it is preferable to employ the parent myeloma cell line (SP2O), available

from the ATCC. After fusion, the resulting hybridoma cells are selectively maintained in HAT medium, and then cloned by limiting dilution as described by Wands et al. (Gastroenterology 80:225-232 (1981)). The hybridoma cells obtained through such a selection are then assayed to identify clones which secrete antibodies capable of binding the polypeptide of the present invention.

Alternatively, additional antibodies capable of binding to polypeptide of the present invention can be produced in a two-step procedure using anti-idiotypic antibodies. Such a method makes use of the fact that antibodies are themselves antigens, and therefore, it is possible to obtain an antibody which binds to a second antibody. In accordance with this method, protein specific antibodies are used to immunize an animal, preferably a mouse. The splenocytes of such an animal are then used to produce hybridoma cells, and the hybridoma cells are screened to identify clones which produce an antibody whose ability to bind to the polypeptide of the present invention-specific antibody can be blocked by polypeptide of the present invention. Such antibodies comprise anti-idiotypic antibodies to the polypeptide of the present invention-specific antibody and are used to immunize an animal to induce formation of further polypeptide of the present invention-specific antibodies.

For in vivo use of antibodies in humans, an antibody is "humanized". Such antibodies can be produced using genetic constructs derived from hybridoma cells producing the monoclonal antibodies described above. Methods for producing chimeric and humanized antibodies are known in the art and are discussed herein. (See, for review, Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Cabilly et al., U.S. Patent No. 4,816,567; Taniguchi et al., EP 171496; Morrison et al., EP 173494; Neuberger et al., WO 8601533; Robinson et al., WO 8702671; Boulianne et al., Nature 312:643 (1984); Neuberger et al., Nature 314:268 (1985).)

b) Isolation Of Antibody Fragments Directed Against Polypeptide of the Present Invention From A Library Of scFvs

Naturally occurring V-genes isolated from human PBLs are constructed into a library of antibody fragments which contain reactivities against polypeptide of the present invention to which the donor may or may not have been exposed (see e.g., U.S. Patent 5,885,793 incorporated herein by reference in its entirety).

Rescue of the Library. A library of scFvs is constructed from the RNA of human

PBLs as described in PCT publication WO 92/01047. To rescue phage displaying antibody fragments, approximately 109 E. coli harboring the phagemid are used to inoculate 50 ml of 2xTY containing 1% glucose and 100 µg/ml of ampicillin (2xTY-AMP-GLU) and grown to an O.D. of 0.8 with shaking. Five ml of this culture is used to innoculate 50 ml of 2xTY-AMP-GLU, 2 x 108 TU of delta gene 3 helper (M13 delta gene III, see PCT publication WO 92/01047) are added and the culture incubated at 37°C for 45 minutes without shaking and then at 37°C for 45 minutes with shaking. The culture is centrifuged at 4000 r.p.m. for 10 min. and the pellet resuspended in 2 liters of 2xTY containing 100 µg/ml ampicillin and 50 ug/ml kanamycin and grown overnight. Phage are prepared as described in PCT publication WO 92/01047.

M13 delta gene III is prepared as follows: M13 delta gene III helper phage does not encode gene III protein, hence the phage(mid) displaying antibody fragments have a greater avidity of binding to antigen. Infectious M13 delta gene III particles are made by growing the helper phage in cells harboring a pUC19 derivative supplying the wild type gene III protein during phage morphogenesis. The culture is incubated for 1 hour at 37° C without shaking and then for a further hour at 37°C with shaking. Cells are spun down (IEC-Centra 8,400 r.p.m. for 10 min), resuspended in 300 ml 2xTY broth containing 100 µg ampicillin/ml and 25 µg kanamycin/ml (2xTY-AMP-KAN) and grown overnight, shaking at 37°C. Phage particles are purified and concentrated from the culture medium by two PEG-precipitations (Sambrook et al., 1990), resuspended in 2 ml PBS and passed through a 0.45 µm filter (Minisart NML; Sartorius) to give a final concentration of approximately 1013 transducing units/ml (ampicillin-resistant clones).

Panning of the Library. Immunotubes (Nunc) are coated overnight in PBS with 4 ml of either 100 µg/ml or 10 µg/ml of a polypeptide of the present invention. Tubes are blocked with 2% Marvel-PBS for 2 hours at 37°C and then washed 3 times in PBS. Approximately 1013 TU of phage is applied to the tube and incubated for 30 minutes at room temperature tumbling on an over and under turntable and then left to stand for another 1.5 hours. Tubes are washed 10 times with PBS 0.1% Tween-20 and 10 times with PBS. Phage are eluted by adding 1 ml of 100 mM triethylamine and rotating 15 minutes on an under and over turntable after which the solution is immediately neutralized with 0.5 ml of 1.0M Tris-HCl, pH 7.4. Phage are then used to infect 10 ml of mid-log E. coli TG1 by incubating eluted phage with bacteria for 30 minutes at 37°C. The E. coli are then plated on TYE plates containing 1%

glucose and 100 μg/ml ampicillin. The resulting bacterial library is then rescued with delta gene 3 helper phage as described above to prepare phage for a subsequent round of selection. This process is then repeated for a total of 4 rounds of affinity purification with tube-washing increased to 20 times with PBS, 0.1% Tween-20 and 20 times with PBS for rounds 3 and 4.

Characterization of Binders. Eluted phage from the 3rd and 4th rounds of selection are used to infect E. coli HB 2151 and soluble scFv is produced (Marks, et al., 1991) from single colonies for assay. ELISAs are performed with microtitre plates coated with either 10 pg/ml of the polypeptide of the present invention in 50 mM bicarbonate pH 9.6. Clones positive in ELISA are further characterized by PCR fingerprinting (see, e.g., PCT publication WO 92/01047) and then by sequencing. These ELISA positive clones may also be further characterized by techniques known in the art, such as, for example, epitope mapping, binding affinity, receptor signal transduction, ability to block or competitively inhibit antibody/antigen binding, and competitive agonistic or antagonistic activity.

Example 11: Method of Determining Alterations in a Gene Corresponding to a Polynucleotide

RNA isolated from entire families or individual patients presenting with a phenotype of interest (such as a disease) is be isolated. cDNA is then generated from these RNA samples using protocols known in the art. (See, Sambrook.) The cDNA is then used as a template for PCR, employing primers surrounding regions of interest in SEQ ID NO:X. Suggested PCR conditions consist of 35 cycles at 95 degrees C for 30 seconds; 60-120 seconds at 52-58 degrees C; and 60-120 seconds at 70 degrees C, using buffer solutions described in Sidransky et al., Science 252:706 (1991).

PCR products are then sequenced using primers labeled at their 5' end with T4 polynucleotide kinase, employing SequiTherm Polymerase. (Epicentre Technologies). The intron-exon borders of selected exons is also determined and genomic PCR products analyzed to confirm the results. PCR products harboring suspected mutations is then cloned and sequenced to validate the results of the direct sequencing.

PCR products is cloned into T-tailed vectors as described in Holton et al., Nucleic Acids Research, 19:1156 (1991) and sequenced with T7 polymerase (United States

Biochemical). . Affected individuals are identified by mutations not present in unaffected individuals.

Genomic rearrangements are also observed as a method of determining alterations in a gene corresponding to a polynucleotide. Genomic clones isolated according to Example 2 are nick-translated with digoxigenindeoxy-uridine 5'-triphosphate (Boehringer Manheim), and FISH performed as described in Johnson et al., Methods Cell Biol. 35:73-99 (1991). Hybridization with the labeled probe is carried out using a vast excess of human cot-1 DNA for specific hybridization to the corresponding genomic locus.

Chromosomes are counterstained with 4,6-diamino-2-phenylidole and propidium iodide, producing a combination of C- and R-bands. Aligned images for precise mapping are obtained using a triple-band filter set (Chroma Technology, Brattleboro, VT) in combination with a cooled charge-coupled device camera (Photometrics, Tucson, AZ) and variable excitation wavelength filters. (Johnson et al., Genet. Anal. Tech. Appl., 8:75 (1991).) Image collection, analysis and chromosomal fractional length measurements are performed using the ISee Graphical Program System. (Inovision Corporation, Durham, NC.) Chromosome alterations of the genomic region hybridized by the probe are identified as insertions, deletions, and translocations. These alterations are used as a diagnostic marker for an associated disease.

Example 12: Method of Detecting Abnormal Levels of a Polypeptide in a Biological Sample

A polypeptide of the present invention can be detected in a biological sample, and if an increased or decreased level of the polypeptide is detected, this polypeptide is a marker for a particular phenotype. Methods of detection are numerous, and thus, it is understood that one skilled in the art can modify the following assay to fit their particular needs.

For example, antibody-sandwich ELISAs are used to detect polypeptides in a sample, preferably a biological sample. Wells of a microtiter plate are coated with specific antibodies, at a final concentration of 0.2 to 10 ug/ml. The antibodies are either monoclonal or polyclonal and are produced by the method described in Example 10. The wells are blocked so that non-specific binding of the polypeptide to the well is reduced.

The coated wells are then incubated for > 2 hours at RT with a sample containing the polypeptide. Preferably, serial dilutions of the sample should be used to validate results. The plates are then washed three times with deionized or distilled water to remove unbounded polypeptide.

Next, 50 ul of specific antibody-alkaline phosphatase conjugate, at a concentration of 25-400 ng, is added and incubated for 2 hours at room temperature. The plates are again washed three times with deionized or distilled water to remove unbounded conjugate.

Add 75 ul of 4-methylumbelliferyl phosphate (MUP) or p-nitrophenyl phosphate (NPP) substrate solution to each well and incubate 1 hour at room temperature. Measure the reaction by a microtiter plate reader. Prepare a standard curve, using serial dilutions of a control sample, and plot polypeptide concentration on the X-axis (log scale) and fluorescence or absorbance of the Y-axis (linear scale). Interpolate the concentration of the polypeptide in the sample using the standard curve.

Example 13: Formulation

The invention also provides methods of treatment and/or prevention of diseases or disorders (such as, for example, any one or more of the diseases or disorders disclosed herein) by administration to a subject of an effective amount of a Therapeutic. By therapeutic is meant a polynucleotides or polypeptides of the invention (including fragments and variants), agonists or antagonists thereof, and/or antibodies thereto, in combination with a pharmaceutically acceptable carrier type (e.g., a sterile carrier).

The Therapeutic will be formulated and dosed in a fashion consistent with good medical practice, taking into account the clinical condition of the individual patient (especially the side effects of treatment with the Therapeutic alone), the site of delivery, the method of administration, the scheduling of administration, and other factors known to practitioners. The "effective amount" for purposes herein is thus determined by such considerations.

As a general proposition, the total pharmaceutically effective amount of the Therapeutic administered parenterally per dose will be in the range of about 1ug/kg/day to 10 mg/kg/day of patient body weight, although, as noted above, this will be subject to therapeutic discretion. More preferably, this dose is at least 0.01 mg/kg/day, and most preferably for humans between about 0.01 and 1 mg/kg/day for the hormone. If given

continuously, the Therapeutic is typically administered at a dose rate of about 1 ug/kg/hour to about 50 ug/kg/hour, either by 1-4 injections per day or by continuous subcutaneous infusions, for example, using a mini-pump. An intravenous bag solution may also be employed. The length of treatment needed to observe changes and the interval following treatment for responses to occur appears to vary depending on the desired effect.

Therapeutics can be are administered orally, rectally, parenterally, intracistemally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), bucally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material or formulation auxiliary of any. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics are administered orally, rectally, parenterally, intracistemally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), bucally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material or formulation auxiliary of any type. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics include suitable polymeric materials (such as, for example, semi-permeable polymer matrices in the form of shaped articles, e.g., films, or mirocapsules), suitable hydrophobic materials (for example as an emulsion in an acceptable oil) or ion exchange resins, and sparingly soluble derivatives (such as, for example, a sparingly soluble salt).

Sustained-release matrices include polylactides (U.S. Pat. No. 3,773,919, EP 58,481), copolymers of L-glutamic acid and gamma-ethyl-L-glutamate (Sidman et al., Biopolymers 22:547-556 (1983)), poly (2- hydroxyethyl methacrylate) (Langer et al., J. Biomed. Mater. Res. 15:167-277 (1981), and Langer, Chem. Tech. 12:98-105 (1982)), ethylene vinyl acetate (Langer et al., Id.) or poly-D- (-)-3-hydroxybutyric acid (EP 133,988).

Sustained-release Therapeutics also include liposomally entrapped Therapeutics of the invention (*see* generally, Langer, *Science* 249:1527-1533 (1990); Treat et al., in *Liposomes in the Therapy of Infectious Disease and Cancer*, Lopez-Berestein and Fidler (eds.), Liss, New York, pp. 317 -327 and 353-365 (1989)). Liposomes containing the Therapeutic are prepared by methods known per se: DE 3,218,121; Epstein et al., Proc. Natl. Acad. Sci. (USA) 82:3688-3692 (1985); Hwang et al., Proc. Natl. Acad. Sci.(USA) 77:4030-4034 (1980); EP 52,322; EP 36,676; EP 88,046; EP 143,949; EP 142,641; Japanese Pat. Appl. 83-118008; U.S. Pat. Nos. 4,485,045 and 4,544,545; and EP 102,324. Ordinarily, the liposomes are of the small (about 200-800 Angstroms) unilamellar type in which the lipid content is greater than about 30 mol. percent cholesterol, the selected proportion being adjusted for the optimal Therapeutic.

In yet an additional embodiment, the Therapeutics of the invention are delivered by way of a pump (*see* Langer, *supra*; Sefton, CRC Crit. Ref. Biomed. Eng. 14:201 (1987); Buchwald et al., Surgery 88:507 (1980); Saudek et al., N. Engl. J. Med. 321:574 (1989)).

Other controlled release systems are discussed in the review by Langer (*Science* 249:1527-1533 (1990)).

For parenteral administration, in one embodiment, the Therapeutic is formulated generally by mixing it at the desired degree of purity, in a unit dosage injectable form (solution, suspension, or emulsion), with a pharmaceutically acceptable carrier, i.e., one that is non-toxic to recipients at the dosages and concentrations employed and is compatible with other ingredients of the formulation. For example, the formulation preferably does not include oxidizing agents and other compounds that are known to be deleterious to the Therapeutic.

Generally, the formulations are prepared by contacting the Therapeutic uniformly and intimately with liquid carriers or finely divided solid carriers or both. Then, if necessary, the product is shaped into the desired formulation. Preferably the carrier is a parenteral carrier, more preferably a solution that is isotonic with the blood of the recipient. Examples of such carrier vehicles include water, saline, Ringer's solution, and dextrose solution. Non-aqueous vehicles such as fixed oils and ethyl oleate are also useful herein, as well as liposomes.

The carrier suitably contains minor amounts of additives such as substances that enhance isotonicity and chemical stability. Such materials are non-toxic to recipients at the dosages and concentrations employed, and include buffers such as phosphate, citrate,

succinate, acetic acid, and other organic acids or their salts; antioxidants such as ascorbic acid; low molecular weight (less than about ten residues) polypeptides, e.g., polyarginine or tripeptides; proteins, such as serum albumin, gelatin, or immunoglobulins; hydrophilic polymers such as polyvinylpyrrolidone; amino acids, such as glycine, glutamic acid, aspartic acid, or arginine; monosaccharides, disaccharides, and other carbohydrates including cellulose or its derivatives, glucose, manose, or dextrins; chelating agents such as EDTA; sugar alcohols such as mannitol or sorbitol; counterions such as sodium; and/or nonionic surfactants such as polysorbates, poloxamers, or PEG.

The Therapeutic is typically formulated in such vehicles at a concentration of about 0.1 mg/ml to 100 mg/ml, preferably 1-10 mg/ml, at a pH of about 3 to 8. It will be understood that the use of certain of the foregoing excipients, carriers, or stabilizers will result in the formation of polypeptide salts.

Any pharmaceutical used for therapeutic administration can be sterile. Sterility is readily accomplished by filtration through sterile filtration membranes (e.g., 0.2 micron membranes). Therapeutics generally are placed into a container having a sterile access port, for example, an intravenous solution bag or vial having a stopper pierceable by a hypodermic injection needle.

Therapeutics ordinarily will be stored in unit or multi-dose containers, for example, sealed ampoules or vials, as an aqueous solution or as a lyophilized formulation for reconstitution. As an example of a lyophilized formulation, 10-ml vials are filled with 5 ml of sterile-filtered 1% (w/v) aqueous Therapeutic solution, and the resulting mixture is lyophilized. The infusion solution is prepared by reconstituting the lyophilized Therapeutic using bacteriostatic Water-for-Injection.

The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the Therapeutics of the invention. Associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use or sale for human administration. In addition, the Therapeutics may be employed in conjunction with other therapeutic compounds.

The Therapeutics of the invention may be administered alone or in combination with adjuvants. Adjuvants that may be administered with the Therapeutics of the invention

include, but are not limited to, alum, alum plus deoxycholate (ImmunoAg), MTP-PE (Biocine Corp.), QS21 (Genentech, Inc.), BCG, and MPL. In a specific embodiment, Therapeutics of the invention are administered in combination with alum. In another specific embodiment, Therapeutics of the invention are administered in combination with QS-21. Further adjuvants that may be administered with the Therapeutics of the invention include, but are not limited to, Monophosphoryl lipid immunomodulator, AdjuVax 100a, QS-21, QS-18, CRL1005, Aluminum salts, MF-59, and Virosomal adjuvant technology. Vaccines that may be administered with the Therapeutics of the invention include, but are not limited to, vaccines directed toward protection against MMR (measles, mumps, rubella), polio, varicella, tetanus/diptheria, hepatitis A, hepatitis B, haemophilus influenzae B, whooping cough, pneumonia, influenza, Lyme's Disease, rotavirus, cholera, yellow fever, Japanese encephalitis, poliomyelitis, rabies, typhoid fever, and pertussis. Combinations may be administered either concomitantly, e.g., as an admixture, separately but simultaneously or concurrently; or sequentially. This includes presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the separate administration of one of the compounds or agents given first, followed by the second.

The Therapeutics of the invention may be administered alone or in combination with other therapeutic agents. Therapeutic agents that may be administered in combination with the Therapeutics of the invention, include but not limited to, other members of the TNF family, chemotherapeutic agents, antibiotics, steroidal and non-steroidal anti-inflammatories, conventional immunotherapeutic agents, cytokines and/or growth factors. Combinations may be administered either concomitantly, e.g., as an admixture, separately but simultaneously or concurrently; or sequentially. This includes presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the separate administration of one of the compounds or agents given first, followed by the second.

In one embodiment, the Therapeutics of the invention are administered in combination with members of the TNF family. TNF, TNF-related or TNF-like molecules that may be administered with the Therapeutics of the invention include, but are not limited

to, soluble forms of TNF-alpha, lymphotoxin- alpha (LT-alpha, also known as TNF-beta), LT-beta (found in complex heterotrimer LT-alpha2-beta), OPGL, FasL, CD27L, CD30L, CD40L, 4-1BBL, DcR3, OX40L, TNF-gamma (International Publication No. WO 96/14328), AIM-I (International Publication No. WO 97/33899), endokine-alpha (International Publication No. WO 98/07880), TR6 (International Publication No. WO 98/30694), OPG, and neutrokine-alpha (International Publication No. WO 98/18921, OX40, and nerve growth factor (NGF), and soluble forms of Fas, CD30, CD27, CD40 and 4-IBB, TR2 (International Publication No. WO 96/34095), DR3 (International Publication No. WO 97/33904), DR4 (International Publication No. WO 98/32856), TR5 (International Publication No. WO 98/30693), TR6 (International Publication No. WO 98/30694), TR7 (International Publication No. WO 98/41629), TRANK, TR9 (International Publication No. WO 98/56892),TR10 (International Publication No. WO 98/54202), 312C2 (International Publication No. WO 98/06842), and TR12, and soluble forms CD154, CD70, and CD153.

In certain embodiments, Therapeutics of the invention are administered in combination with antiretroviral agents, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, and/or protease inhibitors. Nucleoside reverse transcriptase inhibitors that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, RETROVIR™ (zidovudine/AZT), VIDEX™ (didanosine/ddI), HIVID™ (zalcitabine/ddC), ZERIT™ (stavudine/d4T), EPIVIR™ (lamivudine/3TC), and COMBIVIR™ (zidovudine/lamivudine). Non-nucleoside reverse transcriptase inhibitors that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, VIRAMUNE™ (nevirapine), RESCRIPTOR™ (delavirdine), and SUSTIVA™ (efavirenz). Protease inhibitors that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, CRIXIVAN™ (indinavir), NORVIR™ (ritonavir), INVIRASE™ (saquinavir), and VIRACEPT™ (nelfinavir). In a specific embodiment, antiretroviral agents, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, and/or protease inhibitors may be used in any combination with Therapeutics of the invention to treat AIDS and/or to prevent or treat HIV infection.

In other embodiments, Therapeutics of the invention may be administered in combination with anti-opportunistic infection agents. Anti-opportunistic agents that may be administered in combination with the Therapeutics of the invention, include, but are not

limited to, TRIMETHOPRIM- SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, ATOVAQUONE™, ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, ETHAMBUTOL™, RIFABUTIN™, CLARITHROMYCIN™, AZITHROMYCIN™, GANCICLOVIR™, FOSCARNET™, CIDOFOVIR™, FLUCONAZOLE™, ITRACONAZOLE™, KETOCONAZOLE™, ACYCLOVIR™, FAMCICOLVIR™, PYRIMETHAMINE™, LEUCOVORIN™, NEUPOGEN™ (filgrastim/G-CSF), and LEUKINE™ (sargramostim/GM-CSF). In a specific embodiment, Therapeutics of the invention are used in any combination with TRIMETHOPRIM-SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, and/or ATOVAQUONE™ to prophylactically treat or prevent an opportunistic *Pneumocystis carinii* pneumonia infection. In another specific embodiment, Therapeutics of the invention are used in any combination with ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, and/or ETHAMBUTOL™ to prophylactically treat or prevent an opportunistic *Mycobacterium avium* complex infection. In another specific embodiment, Therapeutics of the invention are used in any combination with RIFABUTIN™, CLARITHROMYCIN™, and/or AZITHROMYCIN™ to prophylactically treat or prevent an opportunistic *Mycobacterium tuberculosis* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with GANCICLOVIR™, FOSCARNET™, and/or CIDOFOVIR™ to prophylactically treat or prevent an opportunistic cytomegalovirus infection. In another specific embodiment, Therapeutics of the invention are used in any combination with FLUCONAZOLE™, ITRACONAZOLE™, and/or KETOCONAZOLE™ to prophylactically treat or prevent an opportunistic fungal infection. In another specific embodiment, Therapeutics of the invention are used in any combination with ACYCLOVIR™ and/or FAMCICOLVIR™ to prophylactically treat or prevent an opportunistic herpes simplex virus type I and/or type II infection. In another specific embodiment, Therapeutics of the invention are used in any combination with PYRIMETHAMINE™ and/or LEUCOVORIN™ to prophylactically treat or prevent an opportunistic *Toxoplasma gondii* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with LEUCOVORIN™ and/or NEUPOGEN™ to prophylactically treat or prevent an opportunistic bacterial infection.

In a further embodiment, the Therapeutics of the invention are administered in combination with an antiviral agent. Antiviral agents that may be administered with the

Therapeutics of the invention include, but are not limited to, acyclovir, ribavirin, amantadine, and remantidine.

In a further embodiment, the Therapeutics of the invention are administered in combination with an antibiotic agent. Antibiotic agents that may be administered with the Therapeutics of the invention include, but are not limited to, amoxicillin, beta-lactamases, aminoglycosides, beta-lactam (glycopeptide), beta-lactamases, Clindamycin, chloramphenicol, cephalosporins, ciprofloxacin, ciprofloxacin, erythromycin, fluoroquinolones, macrolides, metronidazole, penicillins, quinolones, rifampin, streptomycin, sulfonamide, tetracyclines, trimethoprim, trimethoprim-sulfamthoxazole, and vancomycin.

Conventional nonspecific immunosuppressive agents, that may be administered in combination with the Therapeutics of the invention include, but are not limited to, steroids, cyclosporine, cyclosporine analogs, cyclophosphamide methylprednisone, prednisone, azathioprine, FK-506, 15-deoxyspergualin, and other immunosuppressive agents that act by suppressing the function of responding T cells.

In specific embodiments, Therapeutics of the invention are administered in combination with immunosuppressants. Immunosuppressants preparations that may be administered with the Therapeutics of the invention include, but are not limited to, ORTHOCLONE™ (OKT3), SANDIMMUNE™/NEORAL™/SANGDYA™ (cyclosporin), PROGRAF™ (tacrolimus), CELLCEPT™ (mycophenolate), Azathioprine, glucorticosteroids, and RAPAMUNE™ (sirolimus). In a specific embodiment, immunosuppressants may be used to prevent rejection of organ or bone marrow transplantation.

In an additional embodiment, Therapeutics of the invention are administered alone or in combination with one or more intravenous immune globulin preparations. Intravenous immune globulin preparations that may be administered with the Therapeutics of the invention include, but not limited to, GAMMAR™, IVEEGAM™, SANDOGLOBULIN™, GAMMAGARD S/D™, and GAMIMUNE™. In a specific embodiment, Therapeutics of the invention are administered in combination with intravenous immune globulin preparations in transplantation therapy (e.g., bone marrow transplant).

In an additional embodiment, the Therapeutics of the invention are administered alone or in combination with an anti-inflammatory agent. Anti-inflammatory agents that may be administered with the Therapeutics of the invention include, but are not limited to, glucocorticoids and the nonsteroidal anti-inflammatories, aminoarylcarboxylic acid

derivatives, arylacetic acid derivatives, arylbutyric acid derivatives, arylcarboxylic acids, arylpropionic acid derivatives, pyrazoles, pyrazolones, salicylic acid derivatives, thiazinecarboxamides, e-acetamidocaproic acid, S-adenosylmethionine, 3-amino-4-hydroxybutyric acid, amixetrine, bendazac, benzydamine, bucolome, difenpiramide, ditazol, emorfazone, guaiazulene, nabumetone, nimesulide, orgotein, oxaceprol, paranyline, perisoxal, pifoxime, proquazone, proxazole, and tenidap.

In another embodiment, compostions of the invention are administered in combination with a chemotherapeutic agent. Chemotherapeutic agents that may be administered with the Therapeutics of the invention include, but are not limited to, antibiotic derivatives (e.g., doxorubicin, bleomycin, daunorubicin, and dactinomycin); antiestrogens (e.g., tamoxifen); antimetabolites (e.g., fluorouracil, 5-FU, methotrexate, floxuridine, interferon alpha-2b, glutamic acid, plicamycin, mercaptopurine, and 6-thioguanine); cytotoxic agents (e.g., carmustine, BCNU, lomustine, CCNU, cytosine arabinoside, cyclophosphamide, estramustine, hydroxyurea, procarbazine, mitomycin, busulfan, cis-platin, and vincristine sulfate); hormones (e.g., medroxyprogesterone, estramustine phosphate sodium, ethinyl estradiol, estradiol, megestrol acetate, methyltestosterone, diethylstilbestrol diphosphate, chlorotrianisene, and testolactone); nitrogen mustard derivatives (e.g., mephalen, chorambucil, mechlorethamine (nitrogen mustard) and thiotepa); steroids and combinations (e.g., bethamethasone sodium phosphate); and others (e.g., dicarbazine, asparaginase, mitotane, vincristine sulfate, vinblastine sulfate, and etoposide).

In a specific embodiment, Therapeutics of the invention are administered in combination with CHOP (cyclophosphamide, doxorubicin, vincristine, and prednisone) or any combination of the components of CHOP. In another embodiment, Therapeutics of the invention are administered in combination with Rituximab. In a further embodiment, Therapeutics of the invention are administered with Rituxmab and CHOP, or Rituxmab and any combination of the components of CHOP.

In an additional embodiment, the Therapeutics of the invention are administered in combination with cytokines. Cytokines that may be administered with the Therapeutics of the invention include, but are not limited to, IL2, IL3, IL4, IL5, IL6, IL7, IL10, IL12, IL13, IL15, anti-CD40, CD40L, IFN-gamma and TNF-alpha. In another embodiment, Therapeutics of the invention may be administered with any interleukin, including, but not

limited to, IL-1alpha, IL-1beta, IL-2, IL-3, IL- 4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-19, IL-20, and IL-21.

In an additional embodiment, the Therapeutics of the invention are administered in combination with angiogenic proteins. Angiogenic proteins that may be administered with the Therapeutics of the invention include, but are not limited to, Glioma Derived Growth Factor (GDGF), as disclosed in European Patent Number EP-399816; Platelet Derived Growth Factor-A (PDGF-A), as disclosed in European Patent Number EP-682110; Platelet Derived Growth Factor-B (PDGF-B), as disclosed in European Patent Number EP-282317; Placental Growth Factor (PlGF), as disclosed in International Publication Number WO 92/06194; Placental Growth Factor-2 (PlGF-2), as disclosed in Hauser et al., Gorwth Factors, 4:259-268 (1993); Vascular Endothelial Growth Factor (VEGF), as disclosed in International Publication Number WO 90/13649; Vascular Endothelial Growth Factor-A (VEGF-A), as disclosed in European Patent Number EP-506477; Vascular Endothelial Growth Factor-2 (VEGF-2), as disclosed in International Publication Number WO 96/39515; Vascular Endothelial Growth Factor B (VEGF-3); Vascular Endothelial Growth Factor B-186 (VEGF-B186), as disclosed in International Publication Number WO 96/26736; Vascular Endothelial Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/02543; Vascular Endothelial Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/07832; and Vascular Endothelial Growth Factor-E (VEGF-E), as disclosed in German Patent Number DE19639601. The above mentioned references are incorporated herein by reference herein.

In an additional embodiment, the Therapeutics of the invention are administered in combination with hematopoietic growth factors. Hematopoietic growth factors that may be administered with the Therapeutics of the invention include, but are not limited to, LEUKINE™ (SARGRAMOSTIM™) and NEUPOGEN™ (FILGRASTIM™).

In an additional embodiment, the Therapeutics of the invention are administered in combination with Fibroblast Growth Factors. Fibroblast Growth Factors that may be administered with the Therapeutics of the invention include, but are not limited to, FGF-1, FGF-2, FGF-3, FGF-4, FGF-5, FGF-6, FGF-7, FGF-8, FGF-9, FGF-10, FGF-11, FGF-12, FGF-13, FGF-14, and FGF-15.

In additional embodiments, the Therapeutics of the invention are administered in combination with other therapeutic or prophylactic regimens, such as, for example, radiation therapy.

Example 14: Method of Treating Decreased Levels of the Polypeptide

The present invention relates to a method for treating an individual in need of an increased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of an agonist of the invention (including polypeptides of the invention). Moreover, it will be appreciated that conditions caused by a decrease in the standard or normal expression level of a colon or colon cancer related polypeptide in an individual can be treated by administering the agonist or antagonist of the present invention. Thus, the invention also provides a method of treatment of an individual in need of an increased level of the polypeptide comprising administering to such an individual a Therapeutic comprising an amount of the agonist or antagonist to increase the activity level of the polypeptide in such an individual.

For example, a patient with decreased levels of a polypeptide receives a daily dose 0.1-100 ug/kg of the agonist or antagonist for six consecutive days. The exact details of the dosing scheme, based on administration and formulation, are provided in Example 13.

Example 15: Method of Treating Increased Levels of the Polypeptide

The present invention also relates to a method of treating an individual in need of a decreased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of an antagonist of the invention (including polypeptides and antibodies of the invention).

In one example, antisense technology is used to inhibit production of a polypeptide of the present invention. This technology is one example of a method of decreasing levels of a polypeptide, due to a variety of etiologies, such as cancer.

For example, a patient diagnosed with abnormally increased levels of a polypeptide is administered intravenously antisense polynucleotides at 0.5, 1.0, 1.5, 2.0 and 3.0 mg/kg day

for 21 days. This treatment is repeated after a 7-day rest period if the treatment was well tolerated. The formulation of the antisense polynucleotide is provided in Example 13.

Example 16: Method of Treatment Using Gene Therapy-Ex Vivo

One method of gene therapy transplants fibroblasts, which are capable of expressing a polypeptide, onto a patient. Generally, fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in tissue-culture medium and separated into small pieces. Small chunks of the tissue are placed on a wet surface of a tissue culture flask, approximately ten pieces are placed in each flask. The flask is turned upside down, closed tight and left at room temperature over night. After 24 hours at room temperature, the flask is inverted and the chunks of tissue remain fixed to the bottom of the flask and fresh media (e.g., Ham's F12 media, with 10% FBS, penicillin and streptomycin) is added. The flasks are then incubated at 37 degree C for approximately one week.

At this time, fresh media is added and subsequently changed every several days. After an additional two weeks in culture, a monolayer of fibroblasts emerge. The monolayer is trypsinized and scaled into larger flasks.

pMV-7 (Kirschmeier, P.T. et al., DNA, 7:219-25 (1988)), flanked by the long terminal repeats of the Moloney murine sarcoma virus, is digested with EcoRI and HindIII and subsequently treated with calf intestinal phosphatase. The linear vector is fractionated on agarose gel and purified, using glass beads.

The cDNA encoding a polypeptide of the present invention can be amplified using PCR primers which correspond to the 5' and 3' end sequences respectively as set forth in Example 1 using primers and having appropriate restriction sites and initiation/stop codons, if necessary. Preferably, the 5' primer contains an EcoRI site and the 3' primer includes a HindIII site. Equal quantities of the Moloney murine sarcoma virus linear backbone and the amplified EcoRI and HindIII fragment are added together, in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The ligation mixture is then used to transform bacteria HB101, which are then plated onto agar containing kanamycin for the purpose of confirming that the vector has the gene of interest properly inserted.

The amphotropic pA317 or GP+am12 packaging cells are grown in tissue culture to confluent density in Dulbecco's Modified Eagles Medium (DMEM) with 10% calf serum (CS), penicillin and streptomycin. The MSV vector containing the gene is then added to the media and the packaging cells transduced with the vector. The packaging cells now produce infectious viral particles containing the gene (the packaging cells are now referred to as producer cells).

Fresh media is added to the transduced producer cells, and subsequently, the media is harvested from a 10 cm plate of confluent producer cells. The spent media, containing the infectious viral particles, is filtered through a millipore filter to remove detached producer cells and this media is then used to infect fibroblast cells. Media is removed from a sub-confluent plate of fibroblasts and quickly replaced with the media from the producer cells. This media is removed and replaced with fresh media. If the titer of virus is high, then virtually all fibroblasts will be infected and no selection is required. If the titer is very low, then it is necessary to use a retroviral vector that has a selectable marker, such as neo or his. Once the fibroblasts have been efficiently infected, the fibroblasts are analyzed to determine whether protein is produced.

The engineered fibroblasts are then transplanted onto the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads.

Example 17: Gene Therapy Using Endogenous Genes Corresponding To Polynucleotides of the Invention

Another method of gene therapy according to the present invention involves operably associating the endogenous polynucleotide sequence of the invention with a promoter via homologous recombination as described, for example, in U.S. Patent NO: 5,641,670, issued June 24, 1997; International Publication NO: WO 96/29411, published September 26, 1996; International Publication NO: WO 94/12650, published August 4, 1994; Koller et al., *Proc. Natl. Acad. Sci. USA,* 86:8932-8935 (1989); and Zijlstra et al., *Nature,* 342:435-438 (1989). This method involves the activation of a gene which is present in the target cells, but which is not expressed in the cells, or is expressed at a lower level than desired.

Polynucleotide constructs are made which contain a promoter and targeting sequences, which are homologous to the 5' non-coding sequence of endogenous

polynucleotide sequence, flanking the promoter. The targeting sequence will be sufficiently near the 5' end of the polynucleotide sequence so the promoter will be operably linked to the endogenous sequence upon homologous recombination. The promoter and the targeting sequences can be amplified using PCR. Preferably, the amplified promoter contains distinct restriction enzyme sites on the 5' and 3' ends. Preferably, the 3' end of the first targeting sequence contains the same restriction enzyme site as the 5' end of the amplified promoter and the 5' end of the second targeting sequence contains the same restriction site as the 3' end of the amplified promoter.

The amplified promoter and the amplified targeting sequences are digested with the appropriate restriction enzymes and subsequently treated with calf intestinal phosphatase. The digested promoter and digested targeting sequences are added together in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The construct is size fractionated on an agarose gel then purified by phenol extraction and ethanol precipitation.

In this Example, the polynucleotide constructs are administered as naked polynucleotides via electroporation. However, the polynucleotide constructs may also be administered with transfection-facilitating agents, such as liposomes, viral sequences, viral particles, precipitating agents, etc. Such methods of delivery are known in the art.

Once the cells are transfected, homologous recombination will take place which results in the promoter being operably linked to the endogenous polynucleotide sequence. This results in the expression of polynucleotide corresponding to the polynucleotide in the cell. Expression may be detected by immunological staining, or any other method known in the art.

Fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in DMEM + 10% fetal calf serum. Exponentially growing or early stationary phase fibroblasts are trypsinized and rinsed from the plastic surface with nutrient medium. An aliquot of the cell suspension is removed for counting, and the remaining cells are subjected to centrifugation. The supernatant is aspirated and the pellet is resuspended in 5 ml of electroporation buffer (20 mM HEPES pH 7.3, 137 mM NaCl, 5 mM KCl, 0.7 mM Na_2HPO_4, 6 mM dextrose). The cells are recentrifuged, the supernatant aspirated, and the cells resuspended in electroporation buffer containing 1 mg/ml acetylated bovine serum albumin.

The final cell suspension contains approximately $3X10^6$ cells/ml. Electroporation should be performed immediately following resuspension.

Plasmid DNA is prepared according to standard techniques. For example, to construct a plasmid for targeting to the locus corresponding to the polynucleotide of the invention, plasmid pUC18 (MBI Fermentas, Amherst, NY) is digested with HindIII. The CMV promoter is amplified by PCR with an XbaI site on the 5' end and a BamHI site on the 3'end. Two non-coding sequences are amplified via PCR: one non-coding sequence (fragment 1) is amplified with a HindIII site at the 5' end and an Xba site at the 3'end; the other non-coding sequence (fragment 2) is amplified with a BamHI site at the 5'end and a HindIII site at the 3'end. The CMV promoter and the fragments (1 and 2) are digested with the appropriate enzymes (CMV promoter - XbaI and BamHI; fragment 1 - XbaI; fragment 2 - BamHI) and ligated together. The resulting ligation product is digested with HindIII, and ligated with the HindIII-digested pUC18 plasmid.

Plasmid DNA is added to a sterile cuvette with a 0.4 cm electrode gap (Bio-Rad). The final DNA concentration is generally at least 120 μg/ml. 0.5 ml of the cell suspension (containing approximately $1.5.X10^6$ cells) is then added to the cuvette, and the cell suspension and DNA solutions are gently mixed. Electroporation is performed with a Gene-Pulser apparatus (Bio-Rad). Capacitance and voltage are set at 960 μF and 250-300 V, respectively. As voltage increases, cell survival decreases, but the percentage of surviving cells that stably incorporate the introduced DNA into their genome increases dramatically. Given these parameters, a pulse time of approximately 14-20 mSec should be observed.

Electroporated cells are maintained at room temperature for approximately 5 min, and the contents of the cuvette are then gently removed with a sterile transfer pipette. The cells are added directly to 10 ml of prewarmed nutrient media (DMEM with 15% calf serum) in a 10 cm dish and incubated at 37 degree C. The following day, the media is aspirated and replaced with 10 ml of fresh media and incubated for a further 16-24 hours.

The engineered fibroblasts are then injected into the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads. The fibroblasts now produce the protein product. The fibroblasts can then be introduced into a patient as described above.

Example 18: Method of Treatment Using Gene Therapy - In Vivo

Another aspect of the present invention is using *in vivo* gene therapy methods to treat disorders, diseases and conditions. The gene therapy method relates to the introduction of naked nucleic acid (DNA, RNA, and antisense DNA or RNA) sequences into an animal to increase or decrease the expression of the polypeptide. The polynucleotide of the present invention may be operatively linked to a promoter or any other genetic elements necessary for the expression of the polypeptide by the target tissue. Such gene therapy and delivery techniques and methods are known in the art, see, for example, WO90/11092, WO98/11779; U.S. Patent NO. 5693622, 5705151, 5580859; Tabata et al., Cardiovasc. Res. 35(3):470-479 (1997); Chao et al., Pharmacol. Res. 35(6):517-522 (1997); Wolff, Neuromuscul. Disord. 7(5):314-318 (1997); Schwartz et al., Gene Ther. 3(5):405-411 (1996); Tsurumi et al., Circulation 94(12):3281-3290 (1996) (incorporated herein by reference).

The polynucleotide constructs may be delivered by any method that delivers injectable materials to the cells of an animal, such as, injection into the interstitial space of tissues (heart, muscle, skin, lung, liver, intestine and the like). The polynucleotide constructs can be delivered in a pharmaceutically acceptable liquid or aqueous carrier.

The term "naked" polynucleotide, DNA or RNA, refers to sequences that are free from any delivery vehicle that acts to assist, promote, or facilitate entry into the cell, including viral sequences, viral particles, liposome formulations, lipofectin or precipitating agents and the like. However, the polynucleotides of the present invention may also be delivered in liposome formulations (such as those taught in Felgner P.L. et al. (1995) Ann. NY Acad. Sci. 772:126-139 and Abdallah B. et al. (1995) Biol. Cell 85(1):1-7) which can be prepared by methods well known to those skilled in the art.

The polynucleotide vector constructs used in the gene therapy method are preferably constructs that will not integrate into the host genome nor will they contain sequences that allow for replication. Any strong promoter known to those skilled in the art can be used for driving the expression of DNA. Unlike other gene therapies techniques, one major advantage of introducing naked nucleic acid sequences into target cells is the transitory nature of the polynucleotide synthesis in the cells. Studies have shown that non-replicating DNA sequences can be introduced into cells to provide production of the desired polypeptide for periods of up to six months.

The polynucleotide construct can be delivered to the interstitial space of tissues within the an animal, including of muscle, skin, brain, lung, liver, spleen, bone marrow, thymus,

heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis, ovary, uterus, rectum, nervous system, eye, gland, and connective tissue. Interstitial space of the tissues comprises the intercellular fluid, mucopolysaccharide matrix among the reticular fibers of organ tissues, elastic fibers in the walls of vessels or chambers, collagen fibers of fibrous tissues, or that same matrix within connective tissue ensheathing muscle cells or in the lacunae of bone. It is similarly the space occupied by the plasma of the circulation and the lymph fluid of the lymphatic channels. Delivery to the interstitial space of muscle tissue is preferred for the reasons discussed below. They may be conveniently delivered by injection into the tissues comprising these cells. They are preferably delivered to and expressed in persistent, non-dividing cells which are differentiated, although delivery and expression may be achieved in non-differentiated or less completely differentiated cells, such as, for example, stem cells of blood or skin fibroblasts. *In vivo* muscle cells are particularly competent in their ability to take up and express polynucleotides.

For the naked polynucleotide injection, an effective dosage amount of DNA or RNA will be in the range of from about 0.05 g/kg body weight to about 50 mg/kg body weight. Preferably the dosage will be from about 0.005 mg/kg to about 20 mg/kg and more preferably from about 0.05 mg/kg to about 5 mg/kg. Of course, as the artisan of ordinary skill will appreciate, this dosage will vary according to the tissue site of injection. The appropriate and effective dosage of nucleic acid sequence can readily be determined by those of ordinary skill in the art and may depend on the condition being treated and the route of administration. The preferred route of administration is by the parenteral route of injection into the interstitial space of tissues. However, other parenteral routes may also be used, such as, inhalation of an aerosol formulation particularly for delivery to lungs or bronchial tissues, throat or mucous membranes of the nose. In addition, naked polynucleotide constructs can be delivered to arteries during angioplasty by the catheter used in the procedure.

The dose response effects of injected polynucleotide in muscle *in vivo* is determined as follows. Suitable template DNA for production of mRNA coding for polypeptide of the present invention is prepared in accordance with a standard recombinant DNA methodology. The template DNA, which may be either circular or linear, is either used as naked DNA or complexed with liposomes. The quadriceps muscles of mice are then injected with various amounts of the template DNA.

Five to six week old female and male Balb/C mice are anesthetized by intraperitoneal

injection with 0.3 ml of 2.5% Avertin. A 1.5 cm incision is made on the anterior thigh, and the quadriceps muscle is directly visualized. The template DNA is injected in 0.1 ml of carrier in a 1 cc syringe through a 27 gauge needle over one minute, approximately 0.5 cm from the distal insertion site of the muscle into the knee and about 0.2 cm deep. A suture is placed over the injection site for future localization, and the skin is closed with stainless steel clips.

After an appropriate incubation time (e.g., 7 days) muscle extracts are prepared by excising the entire quadriceps. Every fifth 15 um cross-section of the individual quadriceps muscles is histochemically stained for protein expression. A time course for protein expression may be done in a similar fashion except that quadriceps from different mice are harvested at different times. Persistence of DNA in muscle following injection may be determined by Southern blot analysis after preparing total cellular DNA and HIRT supernatants from injected and control mice. The results of the above experimentation in mice can be use to extrapolate proper dosages and other treatment parameters in humans and other animals using naked DNA.

Example 19: Transgenic Animals

The polypeptides of the invention can also be expressed in transgenic animals. Animals of any species, including, but not limited to, mice, rats, rabbits, hamsters, guinea pigs, pigs, micro-pigs, goats, sheep, cows and non-human primates, *e.g.*, baboons, monkeys, and chimpanzees may be used to generate transgenic animals. In a specific embodiment, techniques described herein or otherwise known in the art, are used to express polypeptides of the invention in humans, as part of a gene therapy protocol.

Any technique known in the art may be used to introduce the transgene (i.e., polynucleotides of the invention) into animals to produce the founder lines of transgenic animals. Such techniques include, but are not limited to, pronuclear microinjection (Paterson et al., Appl. Microbiol. Biotechnol. 40:691-698 (1994); Carver et al., Biotechnology (NY) 11:1263-1270 (1993); Wright et al., Biotechnology (NY) 9:830-834 (1991); and Hoppe et al., U.S. Pat. No. 4,873,191 (1989)); retrovirus mediated gene transfer into germ lines (Van der Putten et al., Proc. Natl. Acad. Sci., USA 82:6148-6152 (1985)), blastocysts or embryos; gene targeting in embryonic stem cells (Thompson et al., Cell 56:313-321 (1989));

electroporation of cells or embryos (Lo, 1983, Mol Cell. Biol. 3:1803-1814 (1983)); introduction of the polynucleotides of the invention using a gene gun (see, e.g., Ulmer et al., Science 259:1745 (1993); introducing nucleic acid constructs into embryonic pleuripotent stem cells and transferring the stem cells back into the blastocyst; and sperm-mediated gene transfer (Lavitrano et al., Cell 57:717-723 (1989); etc. For a review of such techniques, see Gordon, "Transgenic Animals," Intl. Rev. Cytol. 115:171-229 (1989), which is incorporated by reference herein in its entirety.

Any technique known in the art may be used to produce transgenic clones containing polynucleotides of the invention, for example, nuclear transfer into enucleated oocytes of nuclei from cultured embryonic, fetal, or adult cells induced to quiescence (Campell et al., Nature 380:64-66 (1996); Wilmut et al., Nature 385:810-813 (1997)).

The present invention provides for transgenic animals that carry the transgene in all their cells, as well as animals which carry the transgene in some, but not all their cells, *i.e.*, mosaic animals or chimeric. The transgene may be integrated as a single transgene or as multiple copies such as in concatamers, *e.g.*, head-to-head tandems or head-to-tail tandems. The transgene may also be selectively introduced into and activated in a particular cell type by following, for example, the teaching of Lasko et al. (Lasko et al., Proc. Natl. Acad. Sci. USA 89:6232-6236 (1992)). The regulatory sequences required for such a cell-type specific activation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art. When it is desired that the polynucleotide transgene be integrated into the chromosomal site of the endogenous gene, gene targeting is preferred. Briefly, when such a technique is to be utilized, vectors containing some nucleotide sequences homologous to the endogenous gene are designed for the purpose of integrating, via homologous recombination with chromosomal sequences, into and disrupting the function of the nucleotide sequence of the endogenous gene. The transgene may also be selectively introduced into a particular cell type, thus inactivating the endogenous gene in only that cell type, by following, for example, the teaching of Gu et al. (Gu et al., Science 265:103-106 (1994)). The regulatory sequences required for such a cell-type specific inactivation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art.

Once transgenic animals have been generated, the expression of the recombinant gene may be assayed utilizing standard techniques. Initial screening may be accomplished by Southern blot analysis or PCR techniques to analyze animal tissues to verify that integration

of the transgene has taken place. The level of mRNA expression of the transgene in the tissues of the transgenic animals may also be assessed using techniques which include, but are not limited to, Northern blot analysis of tissue samples obtained from the animal, *in situ* hybridization analysis, and reverse transcriptase-PCR (rt-PCR). Samples of transgenic gene-expressing tissue may also be evaluated immunocytochemically or immunohistochemically using antibodies specific for the transgene product.

Once the founder animals are produced, they may be bred, inbred, outbred, or crossbred to produce colonies of the particular animal. Examples of such breeding strategies include, but are not limited to: outbreeding of founder animals with more than one integration site in order to establish separate lines; inbreeding of separate lines in order to produce compound transgenics that express the transgene at higher levels because of the effects of additive expression of each transgene; crossing of heterozygous transgenic animals to produce animals homozygous for a given integration site in order to both augment expression and eliminate the need for screening of animals by DNA analysis; crossing of separate homozygous lines to produce compound heterozygous or homozygous lines; and breeding to place the transgene on a distinct background that is appropriate for an experimental model of interest.

Transgenic animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

Example 20: Knock-Out Animals

Endogenous gene expression can also be reduced by inactivating or "knocking out" the gene and/or its promoter using targeted homologous recombination. (*E.g.*, see Smithies et al., Nature 317:230-234 (1985); Thomas & Capecchi, Cell 51:503-512 (1987); Thompson et al., Cell 5:313-321 (1989); each of which is incorporated by reference herein in its entirety). For example, a mutant, non-functional polynucleotide of the invention (or a completely unrelated DNA sequence) flanked by DNA homologous to the endogenous polynucleotide sequence (either the coding regions or regulatory regions of the gene) can be used, with or without a selectable marker and/or a negative selectable marker, to transfect

cells that express polypeptides of the invention *in vivo*. In another embodiment, techniques known in the art are used to generate knockouts in cells that contain, but do not express the gene of interest. Insertion of the DNA construct, via targeted homologous recombination, results in inactivation of the targeted gene. Such approaches are particularly suited in research and agricultural fields where modifications to embryonic stem cells can be used to generate animal offspring with an inactive targeted gene (*e.g.*, see Thomas & Capecchi 1987 and Thompson 1989, *supra*). However this approach can be routinely adapted for use in humans provided the recombinant DNA constructs are directly administered or targeted to the required site *in vivo* using appropriate viral vectors that will be apparent to those of skill in the art.

In further embodiments of the invention, cells that are genetically engineered to express the polypeptides of the invention, or alternatively, that are genetically engineered not to express the polypeptides of the invention (e.g., knockouts) are administered to a patient *in vivo*. Such cells may be obtained from the patient (i.e., animal, including human) or an MHC compatible donor and can include, but are not limited to fibroblasts, bone marrow cells, blood cells (e.g., lymphocytes), adipocytes, muscle cells, endothelial cells etc. The cells are genetically engineered *in vitro* using recombinant DNA techniques to introduce the coding sequence of polypeptides of the invention into the cells, or alternatively, to disrupt the coding sequence and/or endogenous regulatory sequence associated with the polypeptides of the invention, e.g., by transduction (using viral vectors, and preferably vectors that integrate the transgene into the cell genome) or transfection procedures, including, but not limited to, the use of plasmids, cosmids, YACs, naked DNA, electroporation, liposomes, etc. The coding sequence of the polypeptides of the invention can be placed under the control of a strong constitutive or inducible promoter or promoter/enhancer to achieve expression, and preferably secretion, of the polypeptides of the invention. The engineered cells which express and preferably secrete the polypeptides of the invention can be introduced into the patient systemically, e.g., in the circulation, or intraperitoneally.

Alternatively, the cells can be incorporated into a matrix and implanted in the body, e.g., genetically engineered fibroblasts can be implanted as part of a skin graft; genetically engineered endothelial cells can be implanted as part of a lymphatic or vascular graft. (See, for example, Anderson et al. U.S. Patent No. 5,399,349; and Mulligan & Wilson, U.S. Patent No. 5,460,959 each of which is incorporated by reference herein in its entirety).

When the cells to be administered are non-autologous or non-MHC compatible cells, they can be administered using well known techniques which prevent the development of a host immune response against the introduced cells. For example, the cells may be introduced in an encapsulated form which, while allowing for an exchange of components with the immediate extracellular environment, does not allow the introduced cells to be recognized by the host immune system.

Transgenic and "knock-out" animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

Example 21: Assays Detecting Stimulation or Inhibition of B cell Proliferation and Differentiation

Generation of functional humoral immune responses requires both soluble and cognate signaling between B-lineage cells and their microenvironment. Signals may impart a positive stimulus that allows a B-lineage cell to continue its programmed development, or a negative stimulus that instructs the cell to arrest its current developmental pathway. To date, numerous stimulatory and inhibitory signals have been found to influence B cell responsiveness including IL-2, IL-4, IL-5, IL-6, IL-7, IL10, IL-13, IL-14 and IL-15. Interestingly, these signals are by themselves weak effectors but can, in combination with various co-stimulatory proteins, induce activation, proliferation, differentiation, homing, tolerance and death among B cell populations.

One of the best studied classes of B-cell co-stimulatory proteins is the TNF-superfamily. Within this family CD40, CD27, and CD30 along with their respective ligands CD154, CD70, and CD153 have been found to regulate a variety of immune responses. Assays which allow for the detection and/or observation of the proliferation and differentiation of these B-cell populations and their precursors are valuable tools in determining the effects various proteins may have on these B-cell populations in terms of proliferation and differentiation. Listed below are two assays designed to allow for the

detection of the differentiation, proliferation, or inhibition of B-cell populations and their precursors.

In Vitro Assay- Agonists or antagonists of the invention can be assessed for its ability to induce activation, proliferation, differentiation or inhibition and/or death in B-cell populations and their precursors. The activity of the agonists or antagonists of the invention on purified human tonsillar B cells, measured qualitatively over the dose range from 0.1 to 10,000 ng/mL, is assessed in a standard B-lymphocyte co-stimulation assay in which purified tonsillar B cells are cultured in the presence of either formalin-fixed Staphylococcus aureus Cowan I (SAC) or immobilized anti-human IgM antibody as the priming agent. Second signals such as IL-2 and IL-15 synergize with SAC and IgM crosslinking to elicit B cell proliferation as measured by tritiated-thymidine incorporation. Novel synergizing agents can be readily identified using this assay. The assay involves isolating human tonsillar B cells by magnetic bead (MACS) depletion of CD3-positive cells. The resulting cell population is greater than 95% B cells as assessed by expression of CD45R(B220).

Various dilutions of each sample are placed into individual wells of a 96-well plate to which are added 10^5 B-cells suspended in culture medium (RPMI 1640 containing 10% FBS, 5 X 10^{-5}M 2ME, 100U/ml penicillin, 10ug/ml streptomycin, and 10^{-5} dilution of SAC) in a total volume of 150ul. Proliferation or inhibition is quantitated by a 20h pulse (1uCi/well) with 3H-thymidine (6.7 Ci/mM) beginning 72h post factor addition. The positive and negative controls are IL2 and medium respectively.

In Vivo Assay- BALB/c mice are injected (i.p.) twice per day with buffer only, or 2 mg/Kg of agonists or antagonists of the invention, or truncated forms thereof. Mice receive this treatment for 4 consecutive days, at which time they are sacrificed and various tissues and serum collected for analyses. Comparison of H&E sections from normal spleens and spleens treated with agonists or antagonists of the invention identify the results of the activity of the agonists or antagonists on spleen cells, such as the diffusion of peri-arterial lymphatic sheaths, and/or significant increases in the nucleated cellularity of the red pulp regions, which may indicate the activation of the differentiation and proliferation of B-cell populations. Immunohistochemical studies using a B cell marker, anti-CD45R(B220), are used to determine whether any physiological changes to splenic cells, such as splenic disorganization, are due to increased B-cell representation within loosely defined B-cell zones that infiltrate established T-cell regions.

Flow cytometric analyses of the spleens from mice treated with agonist or antagonist is used to indicate whether the agonists or antagonists specifically increases the proportion of ThB+, CD45R(B220)dull B cells over that which is observed in control mice.

Likewise, a predicted consequence of increased mature B-cell representation in vivo is a relative increase in serum Ig titers. Accordingly, serum IgM and IgA levels are compared between buffer and agonists or antagonists-treated mice.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 22: T Cell Proliferation Assay

A CD3-induced proliferation assay is performed on PBMCs and is measured by the uptake of ^{3}H-thymidine. The assay is performed as follows. Ninety-six well plates are coated with 100 μl/well of mAb to CD3 (HIT3a, Pharmingen) or isotype-matched control mAb (B33.1) overnight at 4 degrees C (1 μg/ml in .05M bicarbonate buffer, pH 9.5), then washed three times with PBS. PBMC are isolated by F/H gradient centrifugation from human peripheral blood and added to quadruplicate wells (5 x 10^4/well) of mAb coated plates in RPMI containing 10% FCS and P/S in the presence of varying concentrations of agonists or antagonists of the invention (total volume 200 ul). Relevant protein buffer and medium alone are controls. After 48 hr. culture at 37 degrees C, plates are spun for 2 min. at 1000 rpm and 100 μl of supernatant is removed and stored –20 degrees C for measurement of IL-2 (or other cytokines) if effect on proliferation is observed. Wells are supplemented with 100 ul of medium containing 0.5 uCi of ^{3}H-thymidine and cultured at 37 degrees C for 18-24 hr. Wells are harvested and incorporation of ^{3}H-thymidine used as a measure of proliferation. Anti-CD3 alone is the positive control for proliferation. IL-2 (100 U/ml) is also used as a control which enhances proliferation. Control antibody which does not induce proliferation of T cells is used as the negative controls for the effects of agonists or antagonists of the invention.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 23: Effect of Agonists or Antagonists of the Invention on the Expression of MHC Class II, Costimulatory and Adhesion Molecules and Cell Differentiation of Monocytes and Monocyte-Derived Human Dendritic Cells

Dendritic cells are generated by the expansion of proliferating precursors found in the peripheral blood: adherent PBMC or elutriated monocytic fractions are cultured for 7-10 days with GM-CSF (50 ng/ml) and IL-4 (20 ng/ml). These dendritic cells have the characteristic phenotype of immature cells (expression of CD1, CD80, CD86, CD40 and MHC class II antigens). Treatment with activating factors, such as TNF-α, causes a rapid change in surface phenotype (increased expression of MHC class I and II, costimulatory and adhesion molecules, downregulation of FCγRII, upregulation of CD83). These changes correlate with increased antigen-presenting capacity and with functional maturation of the dendritic cells.

FACS analysis of surface antigens is performed as follows. Cells are treated 1-3 days with increasing concentrations of agonist or antagonist of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degrees C. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).

<u>Effect on the production of cytokines</u>. Cytokines generated by dendritic cells, in particular IL-12, are important in the initiation of T-cell dependent immune responses. IL-12 strongly influences the development of Thl helper T-cell immune response, and induces cytotoxic T and NK cell function. An ELISA is used to measure the IL-12 release as follows. Dendritic cells (10^6/ml) are treated with increasing concentrations of agonists or antagonists of the invention for 24 hours. LPS (100 ng/ml) is added to the cell culture as positive control. Supernatants from the cell cultures are then collected and analyzed for IL-12 content using commercial ELISA kit (e..g, R & D Systems (Minneapolis, MN)). The standard protocols provided with the kits are used.

Effect on the expression of MHC Class II, costimulatory and adhesion molecules. Three major families of cell surface antigens can be identified on monocytes: adhesion molecules, molecules involved in antigen presentation, and Fc receptor. Modulation of the expression of MHC class II antigens and other costimulatory molecules, such as B7 and ICAM-1, may result in changes in the antigen presenting capacity of monocytes and ability to induce T cell activation. Increase expression of Fc receptors may correlate with improved monocyte cytotoxic activity, cytokine release and phagocytosis.

FACS analysis is used to examine the surface antigens as follows. Monocytes are treated 1-5 days with increasing concentrations of agonists or antagonists of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degreesC. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).

Monocyte activation and/or increased survival. Assays for molecules that activate (or alternatively, inactivate) monocytes and/or increase monocyte survival (or alternatively, decrease monocyte survival) are known in the art and may routinely be applied to determine whether a molecule of the invention functions as an inhibitor or activator of monocytes. Agonists or antagonists of the invention can be screened using the three assays described below. For each of these assays, Peripheral blood mononuclear cells (PBMC) are purified from single donor leukopacks (American Red Cross, Baltimore, MD) by centrifugation through a Histopaque gradient (Sigma). Monocytes are isolated from PBMC by counterflow centrifugal elutriation.

Monocyte Survival Assay. Human peripheral blood monocytes progressively lose viability when cultured in absence of serum or other stimuli. Their death results from internally regulated process (apoptosis). Addition to the culture of activating factors, such as TNF-alpha dramatically improves cell survival and prevents DNA fragmentation. Propidium iodide (PI) staining is used to measure apoptosis as follows. Monocytes are cultured for 48 hours in polypropylene tubes in serum-free medium (positive control), in the presence of 100 ng/ml TNF-alpha (negative control), and in the presence of varying concentrations of the compound to be tested. Cells are suspended at a concentration of 2 x 10^6/ml in PBS containing PI at a

final concentration of 5 μg/ml, and then incubaed at room temperature for 5 minutes before FACScan analysis. PI uptake has been demonstrated to correlate with DNA fragmentation in this experimental paradigm.

Effect on cytokine release. An important function of monocytes/macrophages is their regulatory activity on other cellular populations of the immune system through the release of cytokines after stimulation. An ELISA to measure cytokine release is performed as follows. Human monocytes are incubated at a density of $5x10^5$ cells/ml with increasing concentrations of agonists or antagonists of the invention and under the same conditions, but in the absence of agonists or antagonists. For IL-12 production, the cells are primed overnight with IFN (100 U/ml) in presence of agonist or antagonist of the invention. LPS (10 ng/ml) is then added. Conditioned media are collected after 24h and kept frozen until use. Measurement of TNF-alpha, IL-10, MCP-1 and IL-8 is then performed using a commercially available ELISA kit (e. g, R & D Systems (Minneapolis, MN)) and applying the standard protocols provided with the kit.

Oxidative burst. Purified monocytes are plated in 96-w plate at $2\text{-}1x10^5$ cell/well. Increasing concentrations of agonists or antagonists of the invention are added to the wells in a total volume of 0.2 ml culture medium (RPMI 1640 + 10% FCS, glutamine and antibiotics). After 3 days incubation, the plates are centrifuged and the medium is removed from the wells. To the macrophage monolayers, 0.2 ml per well of phenol red solution (140 mM NaCl, 10 mM potassium phosphate buffer pH 7.0, 5.5 mM dextrose, 0.56 mM phenol red and 19 U/ml of HRPO) is added, together with the stimulant (200 nM PMA). The plates are incubated at 37°C for 2 hours and the reaction is stopped by adding 20 μl 1N NaOH per well. The absorbance is read at 610 nm. To calculate the amount of H_2O_2 produced by the macrophages, a standard curve of a H_2O_2 solution of known molarity is performed for each experiment.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 24: Biological Effects of Agonists or Antagonists of the Invention

Astrocyte and Neuronal Assays.

Agonists or antagonists of the invention, expressed in *Escherichia coli* and purified as described above, can be tested for activity in promoting the survival, neurite outgrowth, or phenotypic differentiation of cortical neuronal cells and for inducing the proliferation of glial fibrillary acidic protein immunopositive cells, astrocytes. The selection of cortical cells for the bioassay is based on the prevalent expression of FGF-1 and FGF-2 in cortical structures and on the previously reported enhancement of cortical neuronal survival resulting from FGF-2 treatment. A thymidine incorporation assay, for example, can be used to elucidate an agonist or antagonist of the invention's activity on these cells.

Moreover, previous reports describing the biological effects of FGF-2 (basic FGF) on cortical or hippocampal neurons *in vitro* have demonstrated increases in both neuron survival and neurite outgrowth (Walicke et al., "Fibroblast growth factor promotes survival of dissociated hippocampal neurons and enhances neurite extension." *Proc. Natl. Acad. Sci. USA 83*:3012-3016. (1986), assay herein incorporated by reference in its entirety). However, reports from experiments done on PC-12 cells suggest that these two responses are not necessarily synonymous and may depend on not only which FGF is being tested but also on which receptor(s) are expressed on the target cells. Using the primary cortical neuronal culture paradigm, the ability of an agonist or antagonist of the invention to induce neurite outgrowth can be compared to the response achieved with FGF-2 using, for example, a thymidine incorporation assay.

Fibroblast and endothelial cell assays.

Human lung fibroblasts are obtained from Clonetics (San Diego, CA) and maintained in growth media from Clonetics. Dermal microvascular endothelial cells are obtained from Cell Applications (San Diego, CA). For proliferation assays, the human lung fibroblasts and dermal microvascular endothelial cells can be cultured at 5,000 cells/well in a 96-well plate for one day in growth medium. The cells are then incubated for one day in 0.1% BSA basal medium. After replacing the medium with fresh 0.1% BSA medium, the cells are incubated with the test proteins for 3 days. Alamar Blue (Alamar Biosciences, Sacramento, CA) is

added to each well to a final concentration of 10%. The cells are incubated for 4 hr. Cell viability is measured by reading in a CytoFluor fluorescence reader. For the PGE_2 assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or agonists or antagonists of the invention with or without IL-1α for 24 hours. The supernatants are collected and assayed for PGE_2 by EIA kit (Cayman, Ann Arbor, MI). For the IL-6 assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or with or without agonists or antagonists of the invention IL-1α for 24 hours. The supernatants are collected and assayed for IL-6 by ELISA kit (Endogen, Cambridge, MA).

Human lung fibroblasts are cultured with FGF-2 or agonists or antagonists of the invention for 3 days in basal medium before the addition of Alamar Blue to assess effects on growth of the fibroblasts. FGF-2 should show a stimulation at 10 - 2500 ng/ml which can be used to compare stimulation with agonists or antagonists of the invention.

Parkinson Models.

The loss of motor function in Parkinson's disease is attributed to a deficiency of striatal dopamine resulting from the degeneration of the nigrostriatal dopaminergic projection neurons. An animal model for Parkinson's that has been extensively characterized involves the systemic administration of 1-methyl-4 phenyl 1,2,3,6-tetrahydropyridine (MPTP). In the CNS, MPTP is taken-up by astrocytes and catabolized by monoamine oxidase B to 1-methyl-4-phenyl pyridine (MPP^+) and released. Subsequently, MPP^+ is actively accumulated in dopaminergic neurons by the high-affinity reuptake transporter for dopamine. MPP^+ is then concentrated in mitochondria by the electrochemical gradient and selectively inhibits nicotidamide adenine disphosphate: ubiquinone oxidoreductionase (complex I), thereby interfering with electron transport and eventually generating oxygen radicals.

It has been demonstrated in tissue culture paradigms that FGF-2 (basic FGF) has trophic activity towards nigral dopaminergic neurons (Ferrari et al., Dev. Biol. 1989). Recently, Dr. Unsicker's group has demonstrated that administering FGF-2 in gel foam implants in the striatum results in the near complete protection of nigral dopaminergic neurons from the toxicity associated with MPTP exposure (Otto and Unsicker, J. Neuroscience, 1990).

Based on the data with FGF-2, agonists or antagonists of the invention can be evaluated to determine whether it has an action similar to that of FGF-2 in enhancing dopaminergic neuronal survival *in vitro* and it can also be tested *in vivo* for protection of dopaminergic neurons in the striatum from the damage associated with MPTP treatment. The potential effect of an agonist or antagonist of the invention is first examined in vitro in a dopaminergic neuronal cell culture paradigm. The cultures are prepared by dissecting the midbrain floor plate from gestation day 14 Wistar rat embryos. The tissue is dissociated with trypsin and seeded at a density of 200,000 cells/cm^2 on polyorthinine-laminin coated glass coverslips. The cells are maintained in Dulbecco's Modified Eagle's medium and F12 medium containing hormonal supplements (N1). The cultures are fixed with paraformaldehyde after 8 days in vitro and are processed for tyrosine hydroxylase, a specific marker for dopminergic neurons, immunohistochemical staining. Dissociated cell cultures are prepared from embryonic rats. The culture medium is changed every third day and the factors are also added at that time.

Since the dopaminergic neurons are isolated from animals at gestation day 14, a developmental time which is past the stage when the dopaminergic precursor cells are proliferating, an increase in the number of tyrosine hydroxylase immunopositive neurons would represent an increase in the number of dopaminergic neurons surviving *in vitro*. Therefore, if an agonist or antagonist of the invention acts to prolong the survival of dopaminergic neurons, it would suggest that the agonist or antagonist may be involved in Parkinson's Disease.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 25: The Effect of Agonists or Antagonists of the Invention on the Growth of Vascular Endothelial Cells

On day 1, human umbilical vein endothelial cells (HUVEC) are seeded at 2-5x10^4 cells/35 mm dish density in M199 medium containing 4% fetal bovine serum (FBS), 16 units/ml heparin, and 50 units/ml endothelial cell growth supplements (ECGS, Biotechnique,

Inc.). On day 2, the medium is replaced with M199 containing 10% FBS, 8 units/ml heparin. An agonist or antagonist of the invention, and positive controls, such as VEGF and basic FGF (bFGF) are added, at varying concentrations. On days 4 and 6, the medium is replaced. On day 8, cell number is determined with a Coulter Counter.

An increase in the number of HUVEC cells indicates that the compound of the invention may proliferate vascular endothelial cells, while a decrease in the number of HUVEC cell indicates that the compound of the invention inhibits vascular endothelial cells.

The studies described in this example tested activity of a polypeptide of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), agonists, and/or antagonists of the invention.

Example 26: Rat Corneal Wound Healing Model

This animal model shows the effect of an agonist or antagonist of the invention on neovascularization. The experimental protocol includes:

a) Making a 1-1.5 mm long incision from the center of cornea into the stromal layer.

b) Inserting a spatula below the lip of the incision facing the outer corner of the eye.

c) Making a pocket (its base is 1-1.5 mm form the edge of the eye).

d) Positioning a pellet, containing 50ng- 5ug of an agonist or antagonist of the invention, within the pocket.

e) Treatment with an agonist or antagonist of the invention can also be applied topically to the corneal wounds in a dosage range of 20mg - 500mg (daily treatment for five days).

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 27: Diabetic Mouse and Glucocorticoid-Impaired Wound Healing Models

A. Diabetic db+/db+ Mouse Model.

To demonstrate that an agonist or antagonist of the invention accelerates the healing process, the genetically diabetic mouse model of wound healing is used. The full thickness wound healing model in the db+/db+ mouse is a well characterized, clinically relevant and reproducible model of impaired wound healing. Healing of the diabetic wound is dependent on formation of granulation tissue and re-epithelialization rather than contraction (Gartner, M.H. *et al., J. Surg. Res. 52*:389 (1992); Greenhalgh, D.G. *et al., Am. J. Pathol. 136*:1235 (1990)).

The diabetic animals have many of the characteristic features observed in Type II diabetes mellitus. Homozygous (db+/db+) mice are obese in comparison to their normal heterozygous (db+/+m) littermates. Mutant diabetic (db+/db+) mice have a single autosomal recessive mutation on chromosome 4 (db+) (Coleman *et al. Proc. Natl. Acad. Sci. USA 77*:283-293 (1982)). Animals show polyphagia, polydipsia and polyuria. Mutant diabetic mice (db+/db+) have elevated blood glucose, increased or normal insulin levels, and suppressed cell-mediated immunity (Mandel *et al., J. Immunol. 120*:1375 (1978); Debray-Sachs, M. *et al., Clin. Exp. Immunol. 51(1)*:1-7 (1983); Leiter *et al., Am. J. of Pathol. 114*:46-55 (1985)). Peripheral neuropathy, myocardial complications, and microvascular lesions, basement membrane thickening and glomerular filtration abnormalities have been described in these animals (Norido, F. *et al., Exp. Neurol. 83(2)*:221-232 (1984); Robertson *et al., Diabetes 29(1)*:60-67 (1980); Giacomelli *et al., Lab Invest. 40(4)*:460-473 (1979); Coleman, D.L., *Diabetes 31 (Suppl)*:1-6 (1982)). These homozygous diabetic mice develop hyperglycemia that is resistant to insulin analogous to human type II diabetes (Mandel *et al., J. Immunol. 120*:1375-1377 (1978)).

The characteristics observed in these animals suggests that healing in this model may be similar to the healing observed in human diabetes (Greenhalgh, *et al., Am. J. of Pathol. 136*:1235-1246 (1990)).

Genetically diabetic female C57BL/KsJ (db+/db+) mice and their non-diabetic (db+/+m) heterozygous littermates are used in this study (Jackson Laboratories). The animals are purchased at 6 weeks of age and are 8 weeks old at the beginning of the study. Animals are individually housed and received food and water ad libitum. All manipulations are performed using aseptic techniques. The experiments are conducted according to the

rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.

Wounding protocol is performed according to previously reported methods (Tsuboi, R. and Rifkin, D.B., *J. Exp. Med. 172*:245-251 (1990)). Briefly, on the day of wounding, animals are anesthetized with an intraperitoneal injection of Avertin (0.01 mg/mL), 2,2,2-tribromoethanol and 2-methyl-2-butanol dissolved in deionized water. The dorsal region of the animal is shaved and the skin washed with 70% ethanol solution and iodine. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is then created using a Keyes tissue punch. Immediately following wounding, the surrounding skin is gently stretched to eliminate wound expansion. The wounds are left open for the duration of the experiment. Application of the treatment is given topically for 5 consecutive days commencing on the day of wounding. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.

Wounds are visually examined and photographed at a fixed distance at the day of surgery and at two day intervals thereafter. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.

An agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.

Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for histology and immunohistochemistry. Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.

Three groups of 10 animals each (5 diabetic and 5 non-diabetic controls) are evaluated: 1) Vehicle placebo control, 2) untreated group, and 3) treated group.

Wound closure is analyzed by measuring the area in the vertical and horizontal axis and obtaining the total square area of the wound. Contraction is then estimated by establishing the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is $64mm^2$, the corresponding size of the dermal punch. Calculations are made using the following formula:

[Open area on day 8] - [Open area on day 1] / [Open area on day 1]

Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using a Reichert-Jung microtome. Routine hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds are used to assess whether the healing process and the morphologic appearance of the repaired skin is altered by treatment with an agonist or antagonist of the invention. This assessment included verification of the presence of cell accumulation, inflammatory cells, capillaries, fibroblasts, re-epithelialization and epidermal maturity (Greenhalgh, D.G. *et al., Am. J. Pathol. 136:*1235 (1990)). A calibrated lens micrometer is used by a blinded observer.

Tissue sections are also stained immunohistochemically with a polyclonal rabbit anti-human keratin antibody using ABC Elite detection system. Human skin is used as a positive tissue control while non-immune IgG is used as a negative control. Keratinocyte growth is determined by evaluating the extent of reepithelialization of the wound using a calibrated lens micrometer.

Proliferating cell nuclear antigen/cyclin (PCNA) in skin specimens is demonstrated by using anti-PCNA antibody (1:50) with an ABC Elite detection system. Human colon cancer served as a positive tissue control and human brain tissue is used as a negative tissue control. Each specimen included a section with omission of the primary antibody and substitution with non-immune mouse IgG. Ranking of these sections is based on the extent of proliferation on a scale of 0-8, the lower side of the scale reflecting slight proliferation to the higher side reflecting intense proliferation.

Experimental data are analyzed using an unpaired t test. A p value of < 0.05 is considered significant.

B. Steroid Impaired Rat Model

The inhibition of wound healing by steroids has been well documented in various *in vitro* and *in vivo* systems (Wahl, Glucocorticoids and Wound healing. In: Anti-Inflammatory Steroid Action: Basic and Clinical Aspects. 280-302 (1989); Wahl*et al., J. Immunol. 115*: 476-481 (1975); Werb *et al., J. Exp. Med. 147*:1684-1694 (1978)). Glucocorticoids retard

wound healing by inhibiting angiogenesis, decreasing vascular permeability (Ebert *et al.*, *An. Intern. Med. 37*:701-705 (1952)), fibroblast proliferation, and collagen synthesis (Beck *et al.*, *Growth Factors. 5:* 295-304 (1991); Haynes *et al.*, *J. Clin. Invest. 61:* 703-797 (1978)) and producing a transient reduction of circulating monocytes (Haynes et al., *J. Clin. Invest. 61:* 703-797 (1978); Wahl, "Glucocorticoids and wound healing", *In:* Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989)). The systemic administration of steroids to impaired wound healing is a well establish phenomenon in rats (Beck *et al.*, *Growth Factors. 5:* 295-304 (1991); Haynes *et al.*, *J. Clin. Invest. 61:* 703-797 (1978); Wahl, "Glucocorticoids and wound healing", *In*: Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989); Pierce *et al.*, *Proc. Natl. Acad. Sci. USA 86*: 2229-2233 (1989)).

To demonstrate that an agonist or antagonist of the invention can accelerate the healing process, the effects of multiple topical applications of the agonist or antagonist on full thickness excisional skin wounds in rats in which healing has been impaired by the systemic administration of methylprednisolone is assessed.

Young adult male Sprague Dawley rats weighing 250-300 g (Charles River Laboratories) are used in this example. The animals are purchased at 8 weeks of age and are 9 weeks old at the beginning of the study. The healing response of rats is impaired by the systemic administration of methylprednisolone (17mg/kg/rat intramuscularly) at the time of wounding. Animals are individually housed and received food and water *ad libitum*. All manipulations are performed using aseptic techniques. This study is conducted according to the rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.

The wounding protocol is followed according to section A, above. On the day of wounding, animals are anesthetized with an intramuscular injection of ketamine (50 mg/kg) and xylazine (5 mg/kg). The dorsal region of the animal is shaved and the skin washed with 70% ethanol and iodine solutions. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is created using a Keyes tissue punch. The wounds are left open for the duration of the experiment. Applications of the testing materials are given topically once a day for 7 consecutive days commencing on the day of wounding and subsequent to methylprednisolone administration. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.

Wounds are visually examined and photographed at a fixed distance at the day of wounding and at the end of treatment. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.

The agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.

Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for histology. Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.

Four groups of 10 animals each (5 with methylprednisolone and 5 without glucocorticoid) are evaluated: 1) Untreated group 2) Vehicle placebo control 3) treated groups.

Wound closure is analyzed by measuring the area in the vertical and horizontal axis and obtaining the total area of the wound. Closure is then estimated by establishing the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is $64mm^2$, the corresponding size of the dermal punch. Calculations are made using the following formula:

[Open area on day 8] - [Open area on day 1] / [Open area on day 1]

Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using an Olympus microtome. Routine hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds allows assessment of whether the healing process and the morphologic appearance of the repaired skin is improved by treatment with an agonist or antagonist of the invention. A calibrated lens micrometer is used by a blinded observer to determine the distance of the wound gap.

Experimental data are analyzed using an unpaired t test. A p value of < 0.05 is considered significant.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 28: Lymphadema Animal Model

The purpose of this experimental approach is to create an appropriate and consistent lymphedema model for testing the therapeutic effects of an agonist or antagonist of the invention in lymphangiogenesis and re-establishment of the lymphatic circulatory system in the rat hind limb. Effectiveness is measured by swelling volume of the affected limb, quantification of the amount of lymphatic vasculature, total blood plasma protein, and histopathology. Acute lymphedema is observed for 7-10 days. Perhaps more importantly, the chronic progress of the edema is followed for up to 3-4 weeks.

Prior to beginning surgery, blood sample is drawn for protein concentration analysis. Male rats weighing approximately ~350g are dosed with Pentobarbital. Subsequently, the right legs are shaved from knee to hip. The shaved area is swabbed with gauze soaked in 70% EtOH. Blood is drawn for serum total protein testing. Circumference and volumetric measurements are made prior to injecting dye into paws after marking 2 measurement levels (0.5 cm above heel, at mid-pt of dorsal paw). The intradermal dorsum of both right and left paws are injected with 0.05 ml of 1% Evan's Blue. Circumference and volumetric measurements are then made following injection of dye into paws.

Using the knee joint as a landmark, a mid-leg inguinal incision is made circumferentially allowing the femoral vessels to be located. Forceps and hemostats are used to dissect and separate the skin flaps. After locating the femoral vessels, the lymphatic vessel that runs along side and underneath the vessel(s) is located. The main lymphatic vessels in this area are then electrically coagulated or suture ligated.

Using a microscope, muscles in back of the leg (near the semitendinosis and adductors) are bluntly dissected. The popliteal lymph node is then located. The 2 proximal and 2 distal lymphatic vessels and distal blood supply of the popliteal node are then and ligated by suturing. The popliteal lymph node, and any accompanying adipose tissue, is then removed by cutting connective tissues.

Care is taken to control any mild bleeding resulting from this procedure. After lymphatics are occluded, the skin flaps are sealed by using liquid skin (Vetbond) (AJ Buck). The separated skin edges are sealed to the underlying muscle tissue while leaving a gap of ~0.5 cm around the leg. Skin also may be anchored by suturing to underlying muscle when necessary.

To avoid infection, animals are housed individually with mesh (no bedding). Recovering animals are checked daily through the optimal edematous peak, which typically occurred by day 5-7. The plateau edematous peak are then observed. To evaluate the intensity of the lymphedema, the circumference and volumes of 2 designated places on each paw before operation and daily for 7 days are measured. The effect plasma proteins on lymphedema is determined and whether protein analysis is a useful testing perimeter is also investigated. The weights of both control and edematous limbs are evaluated at 2 places. Analysis is performed in a blind manner.

Circumference Measurements: Under brief gas anesthetic to prevent limb movement, a cloth tape is used to measure limb circumference. Measurements are done at the ankle bone and dorsal paw by 2 different people then those 2 readings are averaged. Readings are taken from both control and edematous limbs.

Volumetric Measurements: On the day of surgery, animals are anesthetized with Pentobarbital and are tested prior to surgery. For daily volumetrics animals are under brief halothane anesthetic (rapid immobilization and quick recovery), both legs are shaved and equally marked using waterproof marker on legs. Legs are first dipped in water, then dipped into instrument to each marked level then measured by Buxco edema software(Chen/Victor). Data is recorded by one person, while the other is dipping the limb to marked area.

Blood-plasma protein measurements: Blood is drawn, spun, and serum separated prior to surgery and then at conclusion for total protein and Ca2+ comparison.

Limb Weight Comparison: After drawing blood, the animal is prepared for tissue collection. The limbs are amputated using a quillitine, then both experimental and control legs are cut at the ligature and weighed. A second weighing is done as the tibio-cacaneal joint is disarticulated and the foot is weighed.

Histological Preparations: The transverse muscle located behind the knee (popliteal) area is dissected and arranged in a metal mold, filled with freezeGel, dipped into cold

methylbutane, placed into labeled sample bags at - 80EC until sectioning. Upon sectioning, the muscle is observed under fluorescent microscopy for lymphatics..

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 29: Suppression of TNF alpha-induced adhesion molecule expression by a Agonist or Antagonist of the Invention

The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules (CAMs) on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

Tumor necrosis factor alpha (TNF-a), a potent proinflammatory cytokine, is a stimulator of all three CAMs on endothelial cells and may be involved in a wide variety of inflammatory responses, often resulting in a pathological outcome.

The potential of an agonist or antagonist of the invention to mediate a suppression of TNF-a induced CAM expression can be examined. A modified ELISA assay which uses ECs as a solid phase absorbent is employed to measure the amount of CAM expression on TNF-a treated ECs when co-stimulated with a member of the FGF family of proteins.

To perform the experiment, human umbilical vein endothelial cell (HUVEC) cultures are obtained from pooled cord harvests and maintained in growth medium (EGM-2; Clonetics, San Diego, CA) supplemented with 10% FCS and 1% penicillin/streptomycin in a 37 degree C humidified incubator containing 5% CO2. HUVECs are seeded in 96-well plates at concentrations of 1 x 104 cells/well in EGM medium at 37 degree C for 18-24 hrs or until confluent. The monolayers are subsequently washed 3 times with a serum-free solution

of RPMI-1640 supplemented with 100 U/ml penicillin and 100 mg/ml streptomycin, and treated with a given cytokine and/or growth factor(s) for 24 h at 37 degree C. Following incubation, the cells are then evaluated for CAM expression.

Human Umbilical Vein Endothelial cells (HUVECs) are grown in a standard 96 well plate to confluence. Growth medium is removed from the cells and replaced with 90 ul of 199 Medium (10% FBS). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10 ul volumes). Plates are incubated at 37 degree C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100 μl of 0.1% paraformaldehyde-PBS(with Ca++ and Mg++) is added to each well. Plates are held at 4°C for 30 min.

Fixative is then removed from the wells and wells are washed 1X with PBS(+Ca,Mg)+0.5% BSA and drained. Do not allow the wells to dry. Add 10 μl of diluted primary antibody to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10 μg/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA.

Then add 20 μl of diluted ExtrAvidin-Alkaline Phosphotase (1:5,000 dilution) to each well and incubated at 37°C for 30 min. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA. 1 tablet of p-Nitrophenol Phosphate pNPP is dissolved in 5 ml of glycine buffer (pH 10.4). 100 μl of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphotase in glycine buffer: 1:5,000 (10^{0}) > $10^{-0.5}$ > 10^{-1} > $10^{-1.5}$. 5 μl of each dilution is added to triplicate wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100 μl of pNNP reagent must then be added to each of the standard wells. The plate must be incubated at 37°C for 4h. A volume of 50 μl of 3M NaOH is added to all wells. The results are quantified on a plate reader at 405 nm. The background subtraction option is used on blank wells filled with glycine buffer only. The template is set up to indicate the concentration of AP-conjugate in each standard well [5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 30: TAQMAN

Quantitative PCR (QPCR). Total RNA from cells in culture are extracted by Trizol separation as recommended by the supplier (LifeTechnologies). (Total RNA is treated with DNase I (Life Technologies) to remove any contaminating genomic DNA before reverse transcription.) Total RNA (50 ng) is used in a one-step, 50ul, RT-QPCR, consisting of Taqman Buffer A (Perkin-Elmer; 50 mM KCl/10 mM Tris, pH 8.3), 5.5 mM $MgCl_2$, 240 μM each dNTP, 0.4 units RNase inhibitor(Promega), 8%glycerol, 0.012% Tween-20, 0.05% gelatin, 0.3uM primers, 0.1uM probe, 0.025units Amplitaq Gold (Perkin-Elmer) and 2.5 units Superscript II reverse transcriptase (Life Technologies). As a control for genomic contamination, parallel reactions are setup without reverse transcriptase. The relative abundance of (unknown) and 18S RNAs are assessed by using the Applied Biosystems Prism 7700 Sequence Detection System (Livak, K. J., Flood, S. J., Marmaro, J., Giusti, W. & Deetz, K. (1995) PCR Methods Appl. 4, 357-362). Reactions are carried out at 48°C for 30 min, 95°C for 10 min, followed by 40 cycles of 95°C for 15s, 60°C for 1 min. Reactions are performed in triplicate.

Primers (f & r) and FRET probes sets are designed using Primer Express Software (Perkin-Elmer). Probes are labeled at the 5'-end with the reporter dye 6-FAM and on the 3'-end with the quencher dye TAMRA (Biosource International, Camarillo, CA or Perkin-Elmer).

Example 31: Production Of Polypeptide of the Invention For High-Throughput Screening Assays

The following protocol produces a supernatant containing polypeptide of the present invention to be tested. This supernatant can then be used in the Screening Assays described in Examples 33-42.

First, dilute Poly-D-Lysine (644 587 Boehringer-Mannheim) stock solution (1mg/ml in PBS) 1:20 in PBS (w/o calcium or magnesium 17-516F Biowhittaker) for a working solution of 50ug/ml. Add 200 ul of this solution to each well (24 well plates) and incubate at RT for 20 minutes. Be sure to distribute the solution over each well (note: a 12-channel

pipetter may be used with tips on every other channel). Aspirate off the Poly-D-Lysine solution and rinse with 1ml PBS (Phosphate Buffered Saline). The PBS should remain in the well until just prior to plating the cells and plates may be poly-lysine coated in advance for up to two weeks.

Plate 293T cells (do not carry cells past P+20) at 2 x 10^5 cells/well in .5ml DMEM(Dulbecco's Modified Eagle Medium)(with 4.5 G/L glucose and L-glutamine (12-604F Biowhittaker))/10% heat inactivated FBS(14-503F Biowhittaker)/1x Penstrep(17-602E Biowhittaker). Let the cells grow overnight.

The next day, mix together in a sterile solution basin: 300 ul Lipofectamine (18324-012 Gibco/BRL) and 5ml Optimem I (31985070 Gibco/BRL)/96-well plate. With a small volume multi-channel pipetter, aliquot approximately 2ug of an expression vector containing a polynucleotide insert, produced by the methods described in Examples 8-10, into an appropriately labeled 96-well round bottom plate. With a multi-channel pipetter, add 50ul of the Lipofectamine/Optimem I mixture to each well. Pipette up and down gently to mix. Incubate at RT 15-45 minutes. After about 20 minutes, use a multi-channel pipetter to add 150ul Optimem I to each well. As a control, one plate of vector DNA lacking an insert should be transfected with each set of transfections.

Preferably, the transfection should be performed by tag-teaming the following tasks. By tag-teaming, hands on time is cut in half, and the cells do not spend too much time on PBS. First, person A aspirates off the media from four 24-well plates of cells, and then person B rinses each well with .5-1ml PBS. Person A then aspirates off PBS rinse, and person B, using a12-channel pipetter with tips on every other channel, adds the 200ul of DNA/Lipofectamine/Optimem I complex to the odd wells first, then to the even wells, to each row on the 24-well plates. Incubate at 37 degree C for 6 hours.

While cells are incubating, prepare appropriate media, either 1%BSA in DMEM with 1x penstrep, or HGS CHO-5 media (116.6 mg/L of CaCl2 (anhyd); 0.00130 mg/L CuSO4-5H2O; 0.050 mg/L of Fe(NO3)3-9H2O; 0.417 mg/L of FeSO4-7H2O; 311.80 mg/L of Kcl; 28.64 mg/L of MgCl2; 48.84 mg/L of MgSO4; 6995.50 mg/L of NaCl; 2400.0 mg/L of NaHCO3; 62.50 mg/L of NaH2PO4-H20; 71.02 mg/L of Na2HPO4; .4320 mg/L of ZnSO4-7H2O; .002 mg/L of Arachidonic Acid ; 1.022 mg/L of Cholesterol; .070 mg/L of DL-alpha-Tocopherol-Acetate; 0.0520 mg/L of Linoleic Acid; 0.010 mg/L of Linolenic Acid; 0.010 mg/L of Myristic Acid; 0.010 mg/L of Oleic Acid; 0.010 mg/L of Palmitric Acid; 0.010 mg/L

of Palmitic Acid; 100 mg/L of Pluronic F-68; 0.010 mg/L of Stearic Acid; 2.20 mg/L of Tween 80; 4551 mg/L of D-Glucose; 130.85 mg/ml of L- Alanine; 147.50 mg/ml of L-Arginine-HCL; 7.50 mg/ml of L-Asparagine-H20; 6.65 mg/ml of L-Aspartic Acid; 29.56 mg/ml of L-Cystine-2HCL-H20; 31.29 mg/ml of L-Cystine-2HCL; 7.35 mg/ml of L-Glutamic Acid; 365.0 mg/ml of L-Glutamine; 18.75 mg/ml of Glycine; 52.48 mg/ml of L-Histidine-HCL-H20; 106.97 mg/ml of L-Isoleucine; 111.45 mg/ml of L-Leucine; 163.75 mg/ml of L-Lysine HCL; 32.34 mg/ml of L-Methionine; 68.48 mg/ml of L-Phenylalainine; 40.0 mg/ml of L-Proline; 26.25 mg/ml of L-Serine; 101.05 mg/ml of L-Threonine; 19.22 mg/ml of L-Tryptophan; 91.79 mg/ml of L-Tryrosine-2Na-2H20; and 99.65 mg/ml of L-Valine; 0.0035 mg/L of Biotin; 3.24 mg/L of D-Ca Pantothenate; 11.78 mg/L of Choline Chloride; 4.65 mg/L of Folic Acid; 15.60 mg/L of i-Inositol; 3.02 mg/L of Niacinamide; 3.00 mg/L of Pyridoxal HCL; 0.031 mg/L of Pyridoxine HCL; 0.319 mg/L of Riboflavin; 3.17 mg/L of Thiamine HCL; 0.365 mg/L of Thymidine; 0.680 mg/L of Vitamin B12; 25 mM of HEPES Buffer; 2.39 mg/L of Na Hypoxanthine; 0.105 mg/L of Lipoic Acid; 0.081 mg/L of Sodium Putrescine-2HCL; 55.0 mg/L of Sodium Pyruvate; 0.0067 mg/L of Sodium Selenite; 20uM of Ethanolamine; 0.122 mg/L of Ferric Citrate; 41.70 mg/L of Methyl-B-Cyclodextrin complexed with Linoleic Acid; 33.33 mg/L of Methyl-B-Cyclodextrin complexed with Oleic Acid; 10 mg/L of Methyl-B-Cyclodextrin complexed with Retinal Acetate. Adjust osmolarity to 327 mOsm) with 2mm glutamine and 1x penstrep. (BSA (81-068-3 Bayer) 100gm dissolved in 1L DMEM for a 10% BSA stock solution). Filter the media and collect 50 ul for endotoxin assay in 15ml polystyrene conical.

The transfection reaction is terminated, preferably by tag-teaming, at the end of the incubation period. Person A aspirates off the transfection media, while person B adds 1.5ml appropriate media to each well. Incubate at 37 degree C for 45 or 72 hours depending on the media used: 1%BSA for 45 hours or CHO-5 for 72 hours.

On day four, using a 300ul multichannel pipetter, aliquot 600ul in one 1ml deep well plate and the remaining supernatant into a 2ml deep well. The supernatants from each well can then be used in the assays described in Examples 33-40.

It is specifically understood that when activity is obtained in any of the assays described below using a supernatant, the activity originates from either the polypeptide of the present invention directly (e.g., as a secreted protein) or by polypeptide of the present invention inducing expression of other proteins, which are then secreted into the supernatant.

Thus, the invention further provides a method of identifying the protein in the supernatant characterized by an activity in a particular assay.

Example 32: Construction of GAS Reporter Construct

One signal transduction pathway involved in the differentiation and proliferation of cells is called the Jaks-STATs pathway. Activated proteins in the Jaks-STATs pathway bind to gamma activation site "GAS" elements or interferon-sensitive responsive element ("ISRE"), located in the promoter of many genes. The binding of a protein to these elements alter the expression of the associated gene.

GAS and ISRE elements are recognized by a class of transcription factors called Signal Transducers and Activators of Transcription, or "STATs." There are six members of the STATs family. Stat1 and Stat3 are present in many cell types, as is Stat2 (as response to IFN-alpha is widespread). Stat4 is more restricted and is not in many cell types though it has been found in T helper class I, cells after treatment with IL-12. Stat5 was originally called mammary growth factor, but has been found at higher concentrations in other cells including myeloid cells. It can be activated in tissue culture cells by many cytokines.

The STATs are activated to translocate from the cytoplasm to the nucleus upon tyrosine phosphorylation by a set of kinases known as the Janus Kinase ("Jaks") family. Jaks represent a distinct family of soluble tyrosine kinases and include Tyk2, Jak1, Jak2, and Jak3. These kinases display significant sequence similarity and are generally catalytically inactive in resting cells.

The Jaks are activated by a wide range of receptors summarized in the Table below. (Adapted from review by Schidler and Darnell, Ann. Rev. Biochem. 64:621-51 (1995).) A cytokine receptor family, capable of activating Jaks, is divided into two groups: (a) Class 1 includes receptors for IL-2, IL-3, IL-4, IL-6, IL-7, IL-9, IL-11, IL-12, IL-15, Epo, PRL, GH, G-CSF, GM-CSF, LIF, CNTF, and thrombopoietin; and (b) Class 2 includes IFN-a, IFN-g, and IL-10. The Class 1 receptors share a conserved cysteine motif (a set of four conserved cysteines and one tryptophan) and a WSXWS motif (a membrane proximal region encoding Trp-Ser-Xxx-Trp-Ser (SEQ ID NO: 8556)).

Thus, on binding of a ligand to a receptor, Jaks are activated, which in turn activate STATs, which then translocate and bind to GAS elements. This entire process is

encompassed in the Jaks-STATs signal transduction pathway.

Therefore, activation of the Jaks-STATs pathway, reflected by the binding of the GAS or the ISRE element, can be used to indicate proteins involved in the proliferation and differentiation of cells. For example, growth factors and cytokines are known to activate the Jaks-STATs pathway. (See Table below.) Thus, by using GAS elements linked to reporter molecules, activators of the Jaks-STATs pathway can be identified.

Ligand	tyk2	JAKs Jak1	Jak2	Jak3	STATS	GAS(elements) or ISRE
IFN family						
IFN-a/B	+	+	-	-	1,2,3	ISRE
IFN-g		+	+	-	1	GAS
(IRF1>Lys6>IFP)						
Il-10	+	?	?	-	1,3	
gp130 family						
IL-6 (Pleiotrohic)	+	+	+	?	1,3	GAS
(IRF1>Lys6>IFP)						
Il-11(Pleiotrohic)	?	+	?	?	1,3	
OnM(Pleiotrohic)	?	+	+	?	1,3	
LIF(Pleiotrohic)	?	+	+	?	1,3	
CNTF(Pleiotrohic)	-/+	+	+	?	1,3	
G-CSF(Pleiotrohic)	?	+	?	?	1,3	
IL-12(Pleiotrohic)	+	-	+	+	1,3	
g-C family						
IL-2 (lymphocytes)	-	+	-	+	1,3,5	GAS
IL-4 (lymph/myeloid)	-	+	-	+	6	GAS (IRF1 = IFP
>>Ly6)(IgH)						
IL-7 (lymphocytes)	-	+	-	+	5	GAS
IL-9 (lymphocytes)	-	+	-	+	5	GAS
IL-13 (lymphocyte)	-	+	?	?	6	GAS
IL-15	?	+	?	+	5	GAS
gp140 family						
IL-3 (myeloid)	-	-	+	-	5	GAS
(IRF1>IFP>>Ly6)						
IL-5 (myeloid)	-	-	+	-	5	GAS
GM-CSF (myeloid)	-	-	+	-	5	GAS

Growth hormone family						
GH	?	-	+	-	5	
PRL	?	+/-	+	-	1,3,5	
EPO	?	-	+	-	5	GAS(B-CAS>IRF1=IFP>>Ly6)
Receptor Tyrosine Kinases						
EGF	?	+	+	-	1,3	GAS (IRF1)
PDGF	?	+	+	-	1,3	
CSF-1	?	+	+	-	1,3	GAS (not IRF1)

To construct a synthetic GAS containing promoter element, which is used in the Biological Assays described in Examples 33-34, a PCR based strategy is employed to generate a GAS-SV40 promoter sequence. The 5' primer contains four tandem copies of the GAS binding site found in the IRF1 promoter and previously demonstrated to bind STATs upon induction with a range of cytokines (Rothman et al., Immunity 1:457-468 (1994).), although other GAS or ISRE elements can be used instead. The 5' primer also contains 18bp of sequence complementary to the SV40 early promoter sequence and is flanked with an XhoI site. The sequence of the 5' primer is:

5':GCGCCTCGAGATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCCGAAATGATTTCCCCGAAATATCTGCCATCTCAATTAG:3' (SEQ ID NO:8557)

The downstream primer is complementary to the SV40 promoter and is flanked with a Hind III site: 5':GCGGCAAGCTTTTTGCAAAGCCTAGGC:3' (SEQ ID NO:8558)

PCR amplification is performed using the SV40 promoter template present in the B-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI/Hind III and subcloned into BLSK2-. (Stratagene.) Sequencing with forward and reverse primers confirms that the insert contains the following sequence:

5':<u>CTCGAG</u>ATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCCGAAATGATTTCCCCGAAATATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCGCCCCTAACTCCGCCCATCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTCTCCGCCCCATGGCTGACTAATTTTTTTTATTTATGCAGAGGCCGAGGCCGCCTCGGCCTCTGAGCTATTCCAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCTAGGCTTTTGCAAA<u>AAGCTT</u>:3' (SEQ ID NO:8559)

With this GAS promoter element linked to the SV40 promoter, a GAS:SEAP2 reporter construct is next engineered. Here, the reporter molecule is a secreted alkaline phosphatase, or "SEAP." Clearly, however, any reporter molecule can be instead of SEAP, in this or in any of the other Examples. Well known reporter molecules that can be used instead of SEAP include chloramphenicol acetyltransferase (CAT), luciferase, alkaline phosphatase, B-galactosidase, green fluorescent protein (GFP), or any protein detectable by an antibody.

The above sequence confirmed synthetic GAS-SV40 promoter element is subcloned into the pSEAP-Promoter vector obtained from Clontech using HindIII and XhoI, effectively replacing the SV40 promoter with the amplified GAS:SV40 promoter element, to create the

GAS-SEAP vector. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

Thus, in order to generate mammalian stable cell lines expressing the GAS-SEAP reporter, the GAS-SEAP cassette is removed from the GAS-SEAP vector using SalI and NotI, and inserted into a backbone vector containing the neomycin resistance gene, such as pGFP-1 (Clontech), using these restriction sites in the multiple cloning site, to create the GAS-SEAP/Neo vector. Once this vector is transfected into mammalian cells, this vector can then be used as a reporter molecule for GAS binding as described in Examples 33-34.

Other constructs can be made using the above description and replacing GAS with a different promoter sequence. For example, construction of reporter molecules containing NFK-B and EGR promoter sequences are described in Examples 35 and 36. However, many other promoters can be substituted using the protocols described in these Examples. For instance, SRE, IL-2, NFAT, or Osteocalcin promoters can be substituted, alone or in combination (e.g., GAS/NF-KB/EGR, GAS/NF-KB, Il-2/NFAT, or NF-KB/GAS). Similarly, other cell lines can be used to test reporter construct activity, such as HELA (epithelial), HUVEC (endothelial), Reh (B-cell), Saos-2 (osteoblast), HUVAC (aortic), or Cardiomyocyte.

Example 33: High-Throughput Screening Assay for T-cell Activity.

The following protocol is used to assess T-cell activity by identifying factors, and determining whether supernate containing a polypeptide of the invention proliferates and/or differentiates T-cells. T-cell activity is assessed using the GAS/SEAP/Neo construct produced in Example 32. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The T-cell used in this assay is Jurkat T-cells (ATCC Accession No. TIB-152), although Molt-3 cells (ATCC Accession No. CRL-1552) and Molt-4 cells (ATCC Accession No. CRL-1582) cells can also be used.

Jurkat T-cells are lymphoblastic CD4+ Th1 helper cells. In order to generate stable cell lines, approximately 2 million Jurkat cells are transfected with the GAS-SEAP/neo vector using DMRIE-C (Life Technologies)(transfection procedure described below). The transfected cells are seeded to a density of approximately 20,000 cells per well and transfectants resistant to 1 mg/ml genticin selected. Resistant colonies are expanded and then

tested for their response to increasing concentrations of interferon gamma. The dose response of a selected clone is demonstrated.

Specifically, the following protocol will yield sufficient cells for 75 wells containing 200 ul of cells. Thus, it is either scaled up, or performed in multiple to generate sufficient cells for multiple 96 well plates. Jurkat cells are maintained in RPMI + 10% serum with 1%Pen-Strep. Combine 2.5 mls of OPTI-MEM (Life Technologies) with 10 ug of plasmid DNA in a T25 flask. Add 2.5 ml OPTI-MEM containing 50 ul of DMRIE-C and incubate at room temperature for 15-45 mins.

During the incubation period, count cell concentration, spin down the required number of cells (10^7 per transfection), and resuspend in OPTI-MEM to a final concentration of 10^7 cells/ml. Then add 1ml of 1 x 10^7 cells in OPTI-MEM to T25 flask and incubate at 37 degree C for 6 hrs. After the incubation, add 10 ml of RPMI + 15% serum.

The Jurkat:GAS-SEAP stable reporter lines are maintained in RPMI + 10% serum, 1 mg/ml Genticin, and 1% Pen-Strep. These cells are treated with supernatants containing polypeptide of the present invention or polypeptide of the present invention induced polypeptides as produced by the protocol described in Example 31.

On the day of treatment with the supernatant, the cells should be washed and resuspended in fresh RPMI + 10% serum to a density of 500,000 cells per ml. The exact number of cells required will depend on the number of supernatants being screened. For one 96 well plate, approximately 10 million cells (for 10 plates, 100 million cells) are required.

Transfer the cells to a triangular reservoir boat, in order to dispense the cells into a 96 well dish, using a 12 channel pipette. Using a 12 channel pipette, transfer 200 ul of cells into each well (therefore adding 100, 000 cells per well).

After all the plates have been seeded, 50 ul of the supernatants are transferred directly from the 96 well plate containing the supernatants into each well using a 12 channel pipette. In addition, a dose of exogenous interferon gamma (0.1, 1.0, 10 ng) is added to wells H9, H10, and H11 to serve as additional positive controls for the assay.

The 96 well dishes containing Jurkat cells treated with supernatants are placed in an incubator for 48 hrs (note: this time is variable between 48-72 hrs). 35 ul samples from each well are then transferred to an opaque 96 well plate using a 12 channel pipette. The opaque plates should be covered (using sellophene covers) and stored at -20 degree C until SEAP assays are performed according to Example 37. The plates containing the remaining treated

cells are placed at 4 degree C and serve as a source of material for repeating the assay on a specific well if desired.

As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate Jurkat T cells. Over 30 fold induction is typically observed in the positive control wells.

The above protocol may be used in the generation of both transient, as well as, stable transfected cells, which would be apparent to those of skill in the art.

Example 34: High-Throughput Screening Assay Identifying Myeloid Activity.

The following protocol is used to assess myeloid activity of polypeptide of the present invention by determining whether polypeptide of the present invention proliferates and/or differentiates myeloid cells. Myeloid cell activity is assessed using the GAS/SEAP/Neo construct produced in Example 32. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The myeloid cell used in this assay is U937, a pre-monocyte cell line, although TF-1, HL60, or KG1 can be used.

To transiently transfect U937 cells with the GAS/SEAP/Neo construct produced in Example 32, a DEAE-Dextran method (Kharbanda et. al., 1994, Cell Growth & Differentiation, 5:259-265) is used. First, harvest 2x10e7 U937 cells and wash with PBS. The U937 cells are usually grown in RPMI 1640 medium containing 10% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 mg/ml streptomycin.

Next, suspend the cells in 1 ml of 20 mM Tris-HCl (pH 7.4) buffer containing 0.5 mg/ml DEAE-Dextran, 8 ug GAS-SEAP2 plasmid DNA, 140 mM NaCl, 5 mM KCl, 375 uM Na2HPO4.7H2O, 1 mM MgCl2, and 675 uM CaCl2. Incubate at 37 degrees C for 45 min.

Wash the cells with RPMI 1640 medium containing 10% FBS and then resuspend in 10 ml complete medium and incubate at 37 degree C for 36 hr.

The GAS-SEAP/U937 stable cells are obtained by growing the cells in 400 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 400 ug/ml G418 for couple of passages.

These cells are tested by harvesting $1x10^8$ cells (this is enough for ten 96-well plates assay) and wash with PBS. Suspend the cells in 200 ml above described growth medium,

with a final density of $5x10^5$ cells/ml. Plate 200 ul cells per well in the 96-well plate (or $1x10^5$ cells/well).

Add 50 ul of the supernatant prepared by the protocol described in Example 31. Incubate at 37 degee C for 48 to 72 hr. As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate U937 cells. Over 30 fold induction is typically observed in the positive control wells. SEAP assay the supernatant according to the protocol described in Example 37.

Example 35: High-Throughput Screening Assay Identifying Neuronal Activity.

When cells undergo differentiation and proliferation, a group of genes are activated through many different signal transduction pathways. One of these genes, EGR1 (early growth response gene 1), is induced in various tissues and cell types upon activation. The promoter of EGR1 is responsible for such induction. Using the EGR1 promoter linked to reporter molecules, activation of cells can be assessed by polypeptide of the present invention.

Particularly, the following protocol is used to assess neuronal activity in PC12 cell lines. PC12 cells (rat phenochromocytoma cells) are known to proliferate and/or differentiate by activation with a number of mitogens, such as TPA (tetradecanoyl phorbol acetate), NGF (nerve growth factor), and EGF (epidermal growth factor). The EGR1 gene expression is activated during this treatment. Thus, by stably transfecting PC12 cells with a construct containing an EGR promoter linked to SEAP reporter, activation of PC12 cells by polypeptide of the present invention can be assessed.

The EGR/SEAP reporter construct can be assembled by the following protocol. The EGR-1 promoter sequence (-633 to +1)(Sakamoto K et al., Oncogene 6:867-871 (1991)) can be PCR amplified from human genomic DNA using the following primers:

5' GCGCTCGAGGGATGACAGCGATAGAACCCCGG -3' (SEQ ID NO: 8560)

5' GCGAAGCTTCGCGACTCCCCGGATCCGCCTC-3' (SEQ ID NO: 8561)

Using the GAS:SEAP/Neo vector produced in Example 32, EGR1 amplified product can then be inserted into this vector. Linearize the GAS:SEAP/Neo vector using restriction enzymes XhoI/HindIII, removing the GAS/SV40 stuffer. Restrict the EGR1 amplified

product with these same enzymes. Ligate the vector and the EGR1 promoter.

To prepare 96 well-plates for cell culture, two mls of a coating solution (1:30 dilution of collagen type I (Upstate Biotech Inc. Cat#08-115) in 30% ethanol (filter sterilized)) is added per one 10 cm plate or 50 ml per well of the 96-well plate, and allowed to air dry for 2 hr.

PC12 cells are routinely grown in RPMI-1640 medium (Bio Whittaker) containing 10% horse serum (JRH BIOSCIENCES, Cat. # 12449-78P), 5% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 ug/ml streptomycin on a precoated 10 cm tissue culture dish. One to four split is done every three to four days. Cells are removed from the plates by scraping and resuspended with pipetting up and down for more than 15 times.

Transfect the EGR/SEAP/Neo construct into PC12 using the Lipofectamine protocol described in Example 31. EGR-SEAP/PC12 stable cells are obtained by growing the cells in 300 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 300 ug/ml G418 for couple of passages.

To assay for neuronal activity, a 10 cm plate with cells around 70 to 80% confluent is screened by removing the old medium. Wash the cells once with PBS (Phosphate buffered saline). Then starve the cells in low serum medium (RPMI-1640 containing 1% horse serum and 0.5% FBS with antibiotics) overnight.

The next morning, remove the medium and wash the cells with PBS. Scrape off the cells from the plate, suspend the cells well in 2 ml low serum medium. Count the cell number and add more low serum medium to reach final cell density as 5x105 cells/ml.

Add 200 ul of the cell suspension to each well of 96-well plate (equivalent to 1x105 cells/well). Add 50 ul supernatant produced by Example 31, 37 degree C for 48 to 72 hr. As a positive control, a growth factor known to activate PC12 cells through EGR can be used, such as 50 ng/ul of Neuronal Growth Factor (NGF). Over fifty-fold induction of SEAP is typically seen in the positive control wells. SEAP assay the supernatant according to Example 37.

Example 36: High-Throughput Screening Assay for T-cell Activity.

NF-KB (Nuclear Factor KB) is a transcription factor activated by a wide variety of

agents including the inflammatory cytokines IL-1 and TNF, CD30 and CD40, lymphotoxin-alpha and lymphotoxin-beta, by exposure to LPS or thrombin, and by expression of certain viral gene products. As a transcription factor, NF-KB regulates the expression of genes involved in immune cell activation, control of apoptosis (NF- KB appears to shield cells from apoptosis), B and T-cell development, anti-viral and antimicrobial responses, and multiple stress responses.

In non-stimulated conditions, NF- KB is retained in the cytoplasm with I-KB (Inhibitor KB). However, upon stimulation, I- KB is phosphorylated and degraded, causing NF- KB to shuttle to the nucleus, thereby activating transcription of target genes. Target genes activated by NF- KB include IL-2, IL-6, GM-CSF, ICAM-1 and class 1 MHC.

Due to its central role and ability to respond to a range of stimuli, reporter constructs utilizing the NF-KB promoter element are used to screen the supernatants produced in Example 31. Activators or inhibitors of NF-KB would be useful in treating, preventing, and/or diagnosing diseases. For example, inhibitors of NF-KB could be used to treat those diseases related to the acute or chronic activation of NF-KB, such as rheumatoid arthritis.

To construct a vector containing the NF-KB promoter element, a PCR based strategy is employed. The upstream primer contains four tandem copies of the NF-KB binding site (GGGGACTTTCCC) (SEQ ID NO:8562), 18 bp of sequence complementary to the 5' end of the SV40 early promoter sequence, and is flanked with an XhoI site:

5':GCGGCCTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGACTTTC
CATCCTGCCATCTCAATTAG:3' (SEQ ID NO:8563)

The downstream primer is complementary to the 3' end of the SV40 promoter and is flanked with a Hind III site:

5':GCGGCAAGCTTTTTGCAAAGCCTAGGC:3' (SEQ ID NO:8558)

PCR amplification is performed using the SV40 promoter template present in the pB-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI and Hind III and subcloned into BLSK2-. (Stratagene) Sequencing with the T7 and T3 primers confirms the insert contains the following sequence:

5':CTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGACTTTCCATCTG
CCATCTCAATTAGTCAGCAACCATAGTCCCGCCCCTAACTCCGCCCATCCCGCCC
CTAACTCCGCCCAGTTCCGCCCATTCTCCGCCCCATGGCTGACTAATTTTTTTTAT
TTATGCAGAGGCCGAGGCCGCCTCGGCCTCTGAGCTATTCCAGAAGTAGTGAGG

AGGCTTTTTTGGAGGCCTAGGCTTTTGCAAAAAGCTT:3' (SEQ ID NO:8564)

Next, replace the SV40 minimal promoter element present in the pSEAP2-promoter plasmid (Clontech) with this NF-KB/SV40 fragment using XhoI and HindIII. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

In order to generate stable mammalian cell lines, the NF-KB/SV40/SEAP cassette is removed from the above NF-KB/SEAP vector using restriction enzymes SalI and NotI, and inserted into a vector containing neomycin resistance. Particularly, the NF-KB/SV40/SEAP cassette was inserted into pGFP-1 (Clontech), replacing the GFP gene, after restricting pGFP-1 with SalI and NotI.

Once NF-KB/SV40/SEAP/Neo vector is created, stable Jurkat T-cells are created and maintained according to the protocol described in Example 33. Similarly, the method for assaying supernatants with these stable Jurkat T-cells is also described in Example 33. As a positive control, exogenous TNF alpha (0.1,1, 10 ng) is added to wells H9, H10, and H11, with a 5-10 fold activation typically observed.

Example 37: Assay for SEAP Activity.

As a reporter molecule for the assays described in Examples 33-36, SEAP activity is assayed using the Tropix Phospho-light Kit (Cat. BP-400) according to the following general procedure. The Tropix Phospho-light Kit supplies the Dilution, Assay, and Reaction Buffers used below.

Prime a dispenser with the 2.5x Dilution Buffer and dispense 15 ul of 2.5x dilution buffer into Optiplates containing 35 ul of a supernatant. Seal the plates with a plastic sealer and incubate at 65 degree C for 30 min. Separate the Optiplates to avoid uneven heating.

Cool the samples to room temperature for 15 minutes. Empty the dispenser and prime with the Assay Buffer. Add 50 ml Assay Buffer and incubate at room temperature 5 min. Empty the dispenser and prime with the Reaction Buffer (see the table below). Add 50 ul Reaction Buffer and incubate at room temperature for 20 minutes. Since the intensity of the chemiluminescent signal is time dependent, and it takes about 10 minutes to read 5 plates on luminometer, one should treat 5 plates at each time and start the second set 10 minutes later.

Read the relative light unit in the luminometer. Set H12 as blank, and print the

results. An increase in chemiluminescence indicates reporter activity.

Reaction Buffer Formulation:

# of plates	Rxn buffer diluent (ml)	CSPD (ml)
10	60	3
11	65	3.25
12	70	3.5
13	75	3.75
14	80	4
15	85	4.25
16	90	4.5
17	95	4.75
18	100	5
19	105	5.25
20	110	5.5
21	115	5.75
22	120	6
23	125	6.25
24	130	6.5
25	135	6.75
26	140	7
27	145	7.25
28	150	7.5
29	155	7.75
30	160	8
31	165	8.25
32	170	8.5
33	175	8.75
34	180	9
35	185	9.25
36	190	9.5
37	195	9.75
38	200	10
39	205	10.25
40	210	10.5
41	215	10.75
42	220	11

43	225	11.25
44	230	11.5
45	235	11.75
46	240	12
47	245	12.25
48	250	12.5
49	255	12.75
50	260	13

Example 38: High-Throughput Screening Assay Identifying Changes in Small Molecule Concentration and Membrane Permeability.

Binding of a ligand to a receptor is known to alter intracellular levels of small molecules, such as calcium, potassium, sodium, and pH, as well as alter membrane potential. These alterations can be measured in an assay to identify supernatants which bind to receptors of a particular cell. Although the following protocol describes an assay for calcium, this protocol can easily be modified to detect changes in potassium, sodium, pH, membrane potential, or any other small molecule which is detectable by a fluorescent probe.

The following assay uses Fluorometric Imaging Plate Reader ("FLIPR") to measure changes in fluorescent molecules (Molecular Probes) that bind small molecules. Clearly, any fluorescent molecule detecting a small molecule can be used instead of the calcium fluorescent molecule, fluo-4 (Molecular Probes, Inc.; catalog no. F-14202), used here.

For adherent cells, seed the cells at 10,000 -20,000 cells/well in a Co-star black 96-well plate with clear bottom. The plate is incubated in a CO_2 incubator for 20 hours. The adherent cells are washed two times in Biotek washer with 200 ul of HBSS (Hank's Balanced Salt Solution) leaving 100 ul of buffer after the final wash.

A stock solution of 1 mg/ml fluo-4 is made in 10% pluronic acid DMSO. To load the cells with fluo-4 , 50 ul of 12 ug/ml fluo-4 is added to each well. The plate is incubated at 37 degrees C in a CO_2 incubator for 60 min. The plate is washed four times in the Biotek washer with HBSS leaving 100 ul of buffer.

For non-adherent cells, the cells are spun down from culture media. Cells are re-suspended to 2-5x10^6 cells/ml with HBSS in a 50-ml conical tube. 4 ul of 1 mg/ml fluo-4

solution in 10% pluronic acid DMSO is added to each ml of cell suspension. The tube is then placed in a 37 degrees C water bath for 30-60 min. The cells are washed twice with HBSS, resuspended to $1x10^6$ cells/ml, and dispensed into a microplate, 100 ul/well. The plate is centrifuged at 1000 rpm for 5 min. The plate is then washed once in Denley Cell Wash with 200 ul, followed by an aspiration step to 100 ul final volume.

For a non-cell based assay, each well contains a fluorescent molecule, such as fluo-4 . The supernatant is added to the well, and a change in fluorescence is detected.

To measure the fluorescence of intracellular calcium, the FLIPR is set for the following parameters: (1) System gain is 300-800 mW; (2) Exposure time is 0.4 second; (3) Camera F/stop is F/2; (4) Excitation is 488 nm; (5) Emission is 530 nm; and (6) Sample addition is 50 ul. Increased emission at 530 nm indicates an extracellular signaling event caused by the a molecule, either polypeptide of the present invention or a molecule induced by polypeptide of the present invention, which has resulted in an increase in the intracellular Ca++ concentration.

Example 40: High-Throughput Screening Assay Identifying Tyrosine Kinase Activity.

The Protein Tyrosine Kinases (PTK) represent a diverse group of transmembrane and cytoplasmic kinases. Within the Receptor Protein Tyrosine Kinase RPTK) group are receptors for a range of mitogenic and metabolic growth factors including the PDGF, FGF, EGF, NGF, HGF and Insulin receptor subfamilies. In addition there are a large family of RPTKs for which the corresponding ligand is unknown. Ligands for RPTKs include mainly secreted small proteins, but also membrane-bound and extracellular matrix proteins.

Activation of RPTK by ligands involves ligand-mediated receptor dimerization, resulting in transphosphorylation of the receptor subunits and activation of the cytoplasmic tyrosine kinases. The cytoplasmic tyrosine kinases include receptor associated tyrosine kinases of the src-family (e.g., src, yes, lck, lyn, fyn) and non-receptor linked and cytosolic protein tyrosine kinases, such as the Jak family, members of which mediate signal transduction triggered by the cytokine superfamily of receptors (e.g., the Interleukins, Interferons, GM-CSF, and Leptin).

Because of the wide range of known factors capable of stimulating tyrosine kinase

activity, identifying whether polypeptide of the present invention or a molecule induced by polypeptide of the present invention is capable of activating tyrosine kinase signal transduction pathways is of interest. Therefore, the following protocol is designed to identify such molecules capable of activating the tyrosine kinase signal transduction pathways.

Seed target cells (e.g., primary keratinocytes) at a density of approximately 25,000 cells per well in a 96 well Loprodyne Silent Screen Plates purchased from Nalge Nunc (Naperville, IL). The plates are sterilized with two 30 minute rinses with 100% ethanol, rinsed with water and dried overnight. Some plates are coated for 2 hr with 100 ml of cell culture grade type I collagen (50 mg/ml), gelatin (2%) or polylysine (50 mg/ml), all of which can be purchased from Sigma Chemicals (St. Louis, MO) or 10% Matrigel purchased from Becton Dickinson (Bedford,MA), or calf serum, rinsed with PBS and stored at 4 degree C. Cell growth on these plates is assayed by seeding 5,000 cells/well in growth medium and indirect quantitation of cell number through use of alamarBlue as described by the manufacturer Alamar Biosciences, Inc. (Sacramento, CA) after 48 hr. Falcon plate covers #3071 from Becton Dickinson (Bedford,MA) are used to cover the Loprodyne Silent Screen Plates. Falcon Microtest III cell culture plates can also be used in some proliferation experiments.

To prepare extracts, A431 cells are seeded onto the nylon membranes of Loprodyne plates (20,000/200ml/well) and cultured overnight in complete medium. Cells are quiesced by incubation in serum-free basal medium for 24 hr. After 5-20 minutes treatment with EGF (60ng/ml) or 50 ul of the supernatant produced in Example 31, the medium was removed and 100 ml of extraction buffer ((20 mM HEPES pH 7.5, 0.15 M NaCl, 1% Triton X-100, 0.1% SDS, 2 mM Na3VO4, 2 mM Na4P2O7 and a cocktail of protease inhibitors (# 1836170) obtained from Boeheringer Mannheim (Indianapolis, IN) is added to each well and the plate is shaken on a rotating shaker for 5 minutes at 4oC. The plate is then placed in a vacuum transfer manifold and the extract filtered through the 0.45 mm membrane bottoms of each well using house vacuum. Extracts are collected in a 96-well catch/assay plate in the bottom of the vacuum manifold and immediately placed on ice. To obtain extracts clarified by centrifugation, the content of each well, after detergent solubilization for 5 minutes, is removed and centrifuged for 15 minutes at 4 degree C at 16,000 x g.

Test the filtered extracts for levels of tyrosine kinase activity. Although many methods of detecting tyrosine kinase activity are known, one method is described here.

Generally, the tyrosine kinase activity of a supernatant is evaluated by determining its ability to phosphorylate a tyrosine residue on a specific substrate (a biotinylated peptide). Biotinylated peptides that can be used for this purpose include PSK1 (corresponding to amino acids 6-20 of the cell division kinase cdc2-p34) and PSK2 (corresponding to amino acids 1-17 of gastrin). Both peptides are substrates for a range of tyrosine kinases and are available from Boehringer Mannheim.

The tyrosine kinase reaction is set up by adding the following components in order. First, add 10ul of 5uM Biotinylated Peptide, then 10ul ATP/Mg2+ (5mM ATP/50mM MgCl2), then 10ul of 5x Assay Buffer (40mM imidazole hydrochloride, pH7.3, 40 mM beta-glycerophosphate, 1mM EGTA, 100mM MgCl2, 5 mM MnCl2, 0.5 mg/ml BSA), then 5ul of Sodium Vanadate(1mM), and then 5ul of water. Mix the components gently and preincubate the reaction mix at 30 degree C for 2 min. Initial the reaction by adding 10ul of the control enzyme or the filtered supernatant.

The tyrosine kinase assay reaction is then terminated by adding 10 ul of 120mm EDTA and place the reactions on ice.

Tyrosine kinase activity is determined by transferring 50 ul aliquot of reaction mixture to a microtiter plate (MTP) module and incubating at 37 degree C for 20 min. This allows the streptavadin coated 96 well plate to associate with the biotinylated peptide. Wash the MTP module with 300ul/well of PBS four times. Next add 75 ul of anti-phospotyrosine antibody conjugated to horse radish peroxidase(anti-P-Tyr-POD(0.5u/ml)) to each well and incubate at 37 degree C for one hour. Wash the well as above.

Next add 100ul of peroxidase substrate solution (Boehringer Mannheim) and incubate at room temperature for at least 5 mins (up to 30 min). Measure the absorbance of the sample at 405 nm by using ELISA reader. The level of bound peroxidase activity is quantitated using an ELISA reader and reflects the level of tyrosine kinase activity.

Example 41: High-Throughput Screening Assay Identifying Phosphorylation Activity.

As a potential alternative and/or compliment to the assay of protein tyrosine kinase activity described in Example 40, an assay which detects activation (phosphorylation) of major intracellular signal transduction intermediates can also be used. For example, as

described below one particular assay can detect tyrosine phosphorylation of the Erk-1 and Erk-2 kinases. However, phosphorylation of other molecules, such as Raf, JNK, p38 MAP, Map kinase kinase (MEK), MEK kinase, Src, Muscle specific kinase (MuSK), IRAK, Tec, and Janus, as well as any other phosphoserine, phosphotyrosine, or phosphothreonine molecule, can be detected by substituting these molecules for Erk-1 or Erk-2 in the following assay.

Specifically, assay plates are made by coating the wells of a 96-well ELISA plate with 0.1ml of protein G (1ug/ml) for 2 hr at room temp, (RT). The plates are then rinsed with PBS and blocked with 3% BSA/PBS for 1 hr at RT. The protein G plates are then treated with 2 commercial monoclonal antibodies (100ng/well) against Erk-1 and Erk-2 (1 hr at RT) (Santa Cruz Biotechnology). (To detect other molecules, this step can easily be modified by substituting a monoclonal antibody detecting any of the above described molecules.) After 3-5 rinses with PBS, the plates are stored at 4 degree C until use.

A431 cells are seeded at 20,000/well in a 96-well Loprodyne filterplate and cultured overnight in growth medium. The cells are then starved for 48 hr in basal medium (DMEM) and then treated with EGF (6ng/well) or 50 ul of the supernatants obtained in Example 31 for 5-20 minutes. The cells are then solubilized and extracts filtered directly into the assay plate.

After incubation with the extract for 1 hr at RT, the wells are again rinsed. As a positive control, a commercial preparation of MAP kinase (10ng/well) is used in place of A431 extract. Plates are then treated with a commercial polyclonal (rabbit) antibody (1ug/ml) which specifically recognizes the phosphorylated epitope of the Erk-1 and Erk-2 kinases (1 hr at RT). This antibody is biotinylated by standard procedures. The bound polyclonal antibody is then quantitated by successive incubations with Europium-streptavidin and Europium fluorescence enhancing reagent in the Wallac DELFIA instrument (time-resolved fluorescence). An increased fluorescent signal over background indicates a phosphorylation by polypeptide of the present invention or a molecule induced by polypeptide of the present invention.

Example 42: Assay for the Stimulation of Bone Marrow CD34+ Cell Proliferation.

This assay is based on the ability of human CD34+ to proliferate in the presence of

hematopoietic growth factors and evaluates the ability of isolated polypeptides expressed in mammalian cells to stimulate proliferation of CD34+ cells.

It has been previously shown that most mature precursors will respond to only a single signal. More immature precursors require at least two signals to respond. Therefore, to test the effect of polypeptides on hematopoietic activity of a wide range of progenitor cells, the assay contains a given polypeptide in the presence or absence of other hematopoietic growth factors. Isolated cells are cultured for 5 days in the presence of Stem Cell Factor (SCF) in combination with tested sample. SCF alone has a very limited effect on the proliferation of bone marrow (BM) cells, acting in such conditions only as a "survival" factor. However, combined with any factor exhibiting stimulatory effect on these cells (e.g., IL-3), SCF will cause a synergistic effect. Therefore, if the tested polypeptide has a stimulatory effect on a hematopoietic progenitors, such activity can be easily detected. Since normal BM cells have a low level of cycling cells, it is likely that any inhibitory effect of a given polypeptide, or agonists or antagonists thereof, might not be detected. Accordingly, assays for an inhibitory effect on progenitors is preferably tested in cells that are first subjected to *in vitro* stimulation with SCF+IL+3, and then contacted with the compound that is being evaluated for inhibition of such induced proliferation.

Briefly, CD34+ cells are isolated using methods known in the art. The cells are thawed and resuspended in medium (QBSF 60 serum-free medium with 1% L-glutamine (500ml) Quality Biological, Inc., Gaithersburg, MD Cat# 160-204-101). After several gentle centrifugation steps at 200 x g, cells are allowed to rest for one hour. The cell count is adjusted to 2.5 x 10^5 cells/ml. During this time, 100 μl of sterile water is added to the peripheral wells of a 96-well plate. The cytokines that can be tested with a given polypeptide in this assay is rhSCF (R&D Systems, Minneapolis, MN, Cat# 255-SC) at 50 ng/ml alone and in combination with rhSCF and rhIL-3 (R&D Systems, Minneapolis, MN, Cat# 203-ML) at 30 ng/ml. After one hour, 10 μl of prepared cytokines, 50 μl of the supernatants prepared in Example 31 (supernatants at 1:2 dilution = 50 μl) and 20 μl of diluted cells are added to the media which is already present in the wells to allow for a final total volume of 100 μl. The plates are then placed in a 37°C/5% CO_2 incubator for five days.

Eighteen hours before the assay is harvested, 0.5 μCi/well of [3H] Thymidine is added in a 10 μl volume to each well to determine the proliferation rate. The experiment is terminated by harvesting the cells from each 96-well plate to a filtermat using the Tomtec

Harvester 96. After harvesting, the filtermats are dried, trimmed and placed into OmniFilter assemblies consisting of one OmniFilter plate and one OmniFilter Tray. 60 μl Microscint is added to each well and the plate sealed with TopSeal-A press-on sealing film A bar code 15 sticker is affixed to the first plate for counting. The sealed plates is then loaded and the level of radioactivity determined via the Packard Top Count and the printed data collected for analysis. The level of radioactivity reflects the amount of cell proliferation.

The studies described in this example test the activity of a given polypeptide to stimulate bone marrow CD34+ cell proliferation. One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof. As a nonlimiting example, potential antagonists tested in this assay would be expected to inhibit cell proliferation in the presence of cytokines and/or to increase the inhibition of cell proliferation in the presence of cytokines and a given polypeptide. In contrast, potential agonists tested in this assay would be expected to enhance cell proliferation and/or to decrease the inhibition of cell proliferation in the presence of cytokines and a given polypeptide.

The ability of a gene to stimulate the proliferation of bone marrow CD34+ cells indicates that polynucleotides and polypeptides corresponding to the gene are useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and "Infectious Disease" sections above, and elsewhere herein.

Example 43: Assay for Extracellular Matrix Enhanced Cell Response (EMECR).

The objective of the Extracellular Matrix Enhanced Cell Response (EMECR) assay is to identify gene products (e.g., isolated polypeptides) that act on the hematopoietic stem cells in the context of the extracellular matrix (ECM) induced signal.

Cells respond to the regulatory factors in the context of signal(s) received from the surrounding microenvironment. For example, fibroblasts, and endothelial and epithelial stem cells fail to replicate in the absence of signals from the ECM. Hematopoietic stem cells can undergo self-renewal in the bone marrow, but not in *in vitro* suspension culture. The ability of stem cells to undergo self-renewal *in vitro* is dependent upon their interaction with the

stromal cells and the ECM protein fibronectin (fn). Adhesion of cells to fn is mediated by the $\alpha_5.\beta_1$ and $\alpha_4.\beta_1$ integrin receptors, which are expressed by human and mouse hematopoietic stem cells. The factor(s) which integrate with the ECM environment and responsible for stimulating stem cell self-renewal has not yet been identified. Discovery of such factors should be of great interest in gene therapy and bone marrow transplant applications

Briefly, polystyrene, non tissue culture treated, 96-well plates are coated with fn fragment at a coating concentration of 0.2 μg/ cm^2. Mouse bone marrow cells are plated (1,000 cells/well) in 0.2 ml of serum-free medium. Cells cultured in the presence of IL-3 (5 ng/ml) + SCF (50 ng/ml) would serve as the positive control, conditions under which little self-renewal but pronounced differentiation of the stem cells is to be expected. Gene products of the invention (e.g., including, but not limited to, polynucleotides and polypeptides of the present invention, and supernatants produced in Example 31), are tested with appropriate negative controls in the presence and absence of SCF(5.0 ng/ml), where test factor supernates represent 10% of the total assay volume. The plated cells are then allowed to grow by incubating in a low oxygen environment (5% CO_2, 7% O_2, and 88% N_2) tissue culture incubator for 7 days. The number of proliferating cells within the wells is then quantitated by measuring thymidine incorporation into cellular DNA. Verification of the positive hits in the assay will require phenotypic characterization of the cells, which can be accomplished by scaling up of the culture system and using appropriate antibody reagents against cell surface antigens and FACScan.

One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

If a particular polypeptide of the present invention is found to be a stimulator of hematopoietic progenitors, polynucleotides and polypeptides corresponding to the gene encoding said polypeptide may be useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and "Infectious Disease" sections above, and elsewhere herein. The gene product may also be useful in the expansion of stem cells and committed progenitors of various blood lineages, and in the differentiation and/or proliferation of various cell types.

Additionally, the polynucleotides and/or polypeptides of the gene of interest and/or

agonists and/or antagonists thereof, may also be employed to inhibit the proliferation and differentiation of hematopoietic cells and therefore may be employed to protect bone marrow stem cells from chemotherapeutic agents during chemotherapy. This antiproliferative effect may allow administration of higher doses of chemotherapeutic agents and, therefore, more effective chemotherapeutic treatment.

Moreover, polynucleotides and polypeptides corresponding to the gene of interest may also be useful for the treatment and diagnosis of hematopoietic related disorders such as, for example, anemia, pancytopenia, leukopenia, thrombocytopenia or leukemia since stromal cells are important in the production of cells of hematopoietic lineages. The uses include bone marrow cell ex-vivo culture, bone marrow transplantation, bone marrow reconstitution, radiotherapy or chemotherapy of neoplasia.

Example 44: Human Dermal Fibroblast and Aortic Smooth Muscle Cell Proliferation.

The polypeptide of interest is added to cultures of normal human dermal fibroblasts (NHDF) and human aortic smooth muscle cells (AoSMC) and two co-assays are performed with each sample. The first assay examines the effect of the polypeptide of interest on the proliferation of normal human dermal fibroblasts (NHDF) or aortic smooth muscle cells (AoSMC). Aberrant growth of fibroblasts or smooth muscle cells is a part of several pathological processes, including fibrosis, and restenosis. The second assay examines IL6 production by both NHDF and SMC. IL6 production is an indication of functional activation. Activated cells will have increased production of a number of cytokines and other factors, which can result in a proinflammatory or immunomodulatory outcome. Assays are run with and without co-TNFa stimulation, in order to check for costimulatory or inhibitory activity.

Briefly, on day 1, 96-well black plates are set up with 1000 cells/well (NHDF) or 2000 cells/well (AoSMC) in 100 μl culture media. NHDF culture media contains: Clonetics FB basal media, 1mg/ml hFGF, 5mg/ml insulin, 50mg/ml gentamycin, 2%FBS, while AoSMC culture media contains Clonetics SM basal media, 0.5 μg/ml hEGF, 5mg/ml insulin, 1μg/ml hFGF, 50mg/ml gentamycin, 50 μg/ml Amphotericin B, 5%FBS. After incubation at 37°C for at least 4-5 hours, culture media is aspirated and replaced with growth arrest media. Growth arrest media for NHDF contains fibroblast basal media, 50mg/ml gentamycin, 2%

FBS, while growth arrest media for AoSMC contains SM basal media, 50mg/ml gentamycin, 50μg/ml Amphotericin B, 0.4% FBS. Incubate at 37°C until day 2.

On day 2, serial dilutions and templates of the polypeptide of interest are designed such that they always include media controls and known-protein controls. For both stimulation and inhibition experiments, proteins are diluted in growth arrest media. For inhibition experiments, TNFa is added to a final concentration of 2ng/ml (NHDF) or 5ng/ml (AoSMC). Add 1/3 vol media containing controls or polypeptides of the present invention and incubate at 37°C/5% CO_2 until day 5.

Transfer 60μl from each well to another labeled 96-well plate, cover with a plate-sealer, and store at 4°C until Day 6 (for IL6 ELISA). To the remaining 100 μl in the cell culture plate, aseptically add Alamar Blue in an amount equal to 10% of the culture volume (10μl). Return plates to incubator for 3 to 4 hours. Then measure fluorescence with excitation at 530nm and emission at 590nm using the CytoFluor. This yields the growth stimulation/inhibition data.

On day 5, the IL6 ELISA is performed by coating a 96 well plate with 50-100 ul/well of Anti-Human IL6 Monoclonal antibody diluted in PBS, pH 7.4, incubate ON at room temperature.

On day 6, empty the plates into the sink and blot on paper towels. Prepare Assay Buffer containing PBS with 4% BSA. Block the plates with 200 μl/well of Pierce Super Block blocking buffer in PBS for 1-2 hr and then wash plates with wash buffer (PBS, 0.05% Tween-20). Blot plates on paper towels. Then add 50 μl/well of diluted Anti-Human IL-6 Monoclonal, Biotin-labeled antibody at 0.50 mg/ml. Make dilutions of IL-6 stock in media (30, 10, 3, 1, 0.3, 0 ng/ml). Add duplicate samples to top row of plate. Cover the plates and incubate for 2 hours at RT on shaker. Plates are washed with wash buffer and blotted on paper towels. Dilute EU-labeled Streptavidin 1:1000 in Assay buffer, and add 100 μl/well. Cover the plate and incubate 1 h at RT. Plates are again washed with wash buffer and blotted on paper towels. Add 100 μl/well of Enhancement Solution and shake for 5 minutes. Read the plate on the Wallac DELFIA Fluorometer. Readings from triplicate samples in each assay are tabulated and averaged.

A positive result in this assay suggests AoSMC cell proliferation and that the polypeptide of the present invention may be involved in dermal fibroblast proliferation and/or smooth muscle cell proliferation. A positive result also suggests many potential uses of

polypeptides, polynucleotides, agonists and/or antagonists of the polynucleotide/polypeptide of the present invention which gives a positive result. For example, inflammation and immune responses, wound healing, and angiogenesis, as detailed throughout this specification. Particularly, polypeptides of the present invention and polynucleotides of the present invention may be used in wound healing and dermal regeneration, as well as the promotion of vasculargenesis, both of the blood vessels and lymphatics. The growth of vessels can be used in the treatment of, for example, cardiovascular diseases. Additionally, antagonists of polypeptides and polynucleotides of the invention may be useful in treating diseases, disorders, and/or conditions which involve angiogenesis by acting as an anti-vascular (e.g., anti-angiogenesis). These diseases, disorders, and/or conditions are known in the art and/or are described herein, such as, for example, malignancies, solid tumors, benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas; artheroscleric plaques; ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, uvietis and Pterygia (abnormal blood vessel growth) of the eye; rheumatoid arthritis; psoriasis; delayed wound healing; endometriosis; vasculogenesis; granulations; hypertrophic scars (keloids); nonunion fractures; scleroderma; trachoma; vascular adhesions; myocardial angiogenesis; coronary collaterals; cerebral collaterals; arteriovenous malformations; ischemic limb angiogenesis; Osler-Webber Syndrome; plaque neovascularization; telangiectasia; hemophiliac joints; angiofibroma; fibromuscular dysplasia; wound granulation; Crohn's disease; and atherosclerosis. Moreover, antagonists of polypeptides and polynucleotides of the invention may be useful in treating anti-hyperproliferative diseases and/or anti-inflammatory known in the art and/or described herein.

One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

Example 45: Cellular Adhesion Molecule (CAM) Expression on Endothelial Cells.

The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules (CAMs) on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

Briefly, endothelial cells (e.g., Human Umbilical Vein Endothelial cells (HUVECs)) are grown in a standard 96 well plate to confluence, growth medium is removed from the cells and replaced with 100 µl of 199 Medium (10% fetal bovine serum (FBS)). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10 µl volumes). Plates are then incubated at 37°C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100 µl of 0.1% paraformaldehyde-PBS(with Ca++ and Mg++) is added to each well. Plates are held at 4°C for 30 min. Fixative is removed from the wells and wells are washed 1X with PBS(+Ca,Mg) + 0.5% BSA and drained. 10 µl of diluted primary antibody is added to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10 µg/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed three times with PBS(+Ca,Mg) + 0.5% BSA. 20 µl of diluted ExtrAvidin-Alkaline Phosphotase (1:5,000 dilution, refered to herein as the working dilution) are added to each well and incubated at 37°C for 30 min. Wells are washed three times with PBS(+Ca,Mg)+0.5% BSA. Dissolve 1 tablet of p-Nitrophenol Phosphate pNPP per 5 ml of glycine buffer (pH 10.4). 100 µl of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphotase in glycine buffer: 1:5,000 (10^0) > $10^{-0.5}$ > 10^{-1} > $10^{-1.5}$. 5 µl of each dilution is added to triplicate wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100 µl of pNNP reagent is then added to each of the standard wells. The plate is incubated at 37°C for 4h. A volume of 50 µl of 3M NaOH is added to all wells. The plate is read on a plate reader

at 405 nm using the background subtraction option on blank wells filled with glycine buffer only. Additionally, the template is set up to indicate the concentration of AP-conjugate in each standard well [5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

Example 46: Alamar Blue Endothelial Cells Proliferation Assay.

This assay may be used to quantitatively determine protein mediated inhibition of bFGF-induced proliferation of Bovine Lymphatic Endothelial Cells (LECs), Bovine Aortic Endothelial Cells (BAECs) or Human Microvascular Uterine Myometrial Cells (UTMECs). This assay incorporates a fluorometric growth indicator based on detection of metabolic activity. A standard Alamar Blue Proliferation Assay is prepared in EGM-2MV with 10 ng /ml of bFGF added as a source of endothelial cell stimulation. This assay may be used with a variety of endothelial cells with slight changes in growth medium and cell concentration. Dilutions of the protein batches to be tested are diluted as appropriate. Serum-free medium (GIBCO SFM) without bFGF is used as a non-stimulated control and Angiostatin or TSP-1 are included as a known inhibitory controls.

Briefly, LEC, BAECs or UTMECs are seeded in growth media at a density of 5000 to 2000 cells/well in a 96 well plate and placed at 37-C overnight. After the overnight incubation of the cells, the growth media is removed and replaced with GIBCO EC-SFM. The cells are treated with the appropriate dilutions of the protein of interest or control protein sample(s) (prepared in SFM) in triplicate wells with additional bFGF to a concentration of 10 ng/ ml. Once the cells have been treated with the samples, the plate(s) is/are placed back in the 37° C incubator for three days. After three days 10 ml of stock alamar blue (Biosource Cat# DAL1100) is added to each well and the plate(s) is/are placed back in the 37°C incubator for four hours. The plate(s) are then read at 530nm excitation and 590nm emission using the CytoFluor fluorescence reader. Direct output is recorded in relative fluorescence units.

Alamar blue is an oxidation-reduction indicator that both fluoresces and changes color in response to chemical reduction of growth medium resulting from cell growth. As cells grow in culture, innate metabolic activity results in a chemical reduction of the immediate surrounding environment. Reduction related to growth causes the indicator to change from

oxidized (non-fluorescent blue) form to reduced (fluorescent red) form. i.e. stimulated proliferation will produce a stronger signal and inhibited proliferation will produce a weaker signal and the total signal is proportional to the total number of cells as well as their metabolic activity. The background level of activity is observed with the starvation medium alone. This is compared to the output observed from the positive control samples (bFGF in growth medium) and protein dilutions.

Example 47: Detection of Inhibition of a Mixed Lymphocyte Reaction.

This assay can be used to detect and evaluate inhibition of a Mixed Lymphocyte Reaction (MLR) by gene products (e.g., isolated polypeptides). Inhibition of a MLR may be due to a direct effect on cell proliferation and viability, modulation of costimulatory molecules on interacting cells, modulation of adhesiveness between lymphocytes and accessory cells, or modulation of cytokine production by accessory cells. Multiple cells may be targeted by these polypeptides since the peripheral blood mononuclear fraction used in this assay includes T, B and natural killer lymphocytes, as well as monocytes and dendritic cells.

Polypeptides of interest found to inhibit the MLR may find application in diseases associated with lymphocyte and monocyte activation or proliferation. These include, but are not limited to, diseases such as asthma, arthritis, diabetes, inflammatory skin conditions, psoriasis, eczema, systemic lupus erythematosus, multiple sclerosis, glomerulonephritis, inflammatory bowel disease, crohn's disease, ulcerative colitis, arteriosclerosis, cirrhosis, graft vs. host disease, host vs. graft disease, hepatitis, leukemia and lymphoma.

Briefly, PBMCs from human donors are purified by density gradient centrifugation using Lymphocyte Separation Medium (LSM®, density 1.0770 g/ml, Organon Teknika Corporation, West Chester, PA). PBMCs from two donors are adjusted to 2 x 10^6 cells/ml in RPMI-1640 (Life Technologies, Grand Island, NY) supplemented with 10% FCS and 2 mM glutamine. PBMCs from a third donor is adjusted to 2 x 10^5 cells/ml. Fifty microliters of PBMCs from each donor is added to wells of a 96-well round bottom microtiter plate. Dilutions of test materials (50 μl) is added in triplicate to microtiter wells. Test samples (of the protein of interest) are added for final dilution of 1:4; rhuIL-2 (R&D Systems, Minneapolis, MN, catalog number 202-IL) is added to a final concentration of 1 μg/ml; anti-CD4 mAb (R&D Systems, clone 34930.11, catalog number MAB379) is added to a final

concentration of 10 μg/ml. Cells are cultured for 7-8 days at 37°C in 5% CO_2, and 1 μC of [^{3}H] thymidine is added to wells for the last 16 hrs of culture. Cells are harvested and thymidine incorporation determined using a Packard TopCount. Data is expressed as the mean and standard deviation of triplicate determinations.

Samples of the protein of interest are screened in separate experiments and compared to the negative control treatment, anti-CD4 mAb, which inhibits proliferation of lymphocytes and the positive control treatment, IL-2 (either as recombinant material or supernatant), which enhances proliferation of lymphocytes.

One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

Example 48: Assays for Protease Activity.

The following assay may be used to assess protease activity of the colon or colon cancer related polypeptides of the invention.

Gelatin and casein zymography are performed essentially as described (Heusen et al., *Anal. Biochem.*, 102:196-202 (1980); Wilson et al., *Journal of Urology*, 149:653-658 (1993)). Samples are run on 10% polyacryamide/0.1% SDS gels containing 1% gelain orcasein, soaked in 2.5% triton at room temperature for 1 hour, and in 0.1M glycine, pH 8.3 at 37°C 5 to 16 hours. After staining in amido black areas of proteolysis apear as clear areas agains the blue-black background. Trypsin (Sigma T8642) is used as a positive control.

Protease activity is also determined by monitoring the cleavage of n-a-benzoyl-L-arginine ethyl ester (BAEE) (Sigma B-4500. Reactions are set up in (25mM$NaPO_4$,1mM EDTA, and 1mM BAEE), pH 7.5. Samples are added and the change in adsorbance at 260nm is monitored on the Beckman DU-6 spectrophotometer in the time-drive mode. Trypsin is used as a positive control

Additional assays based upon the release of acid-soluble peptides from casein or hemoglobin measured as adsorbance at 280 nm or colorimetrically using the Folin method are performed as described in Bergmeyer, et al., *Methods of Enzymatic Analysis*, 5 (1984). Other assays involve the solubilization of chromogenic substrates (Ward, *Applied Science*, 251-317 (1983).

Example 49: Identifying Serine Protease Substrate Specificity.

Methods known in the art or described herein may be used to determine the substrate specificity of the polypeptides of the present invention having serine protease activity. A preferred method of determining substrate specificity is by the use of positional scanning synthetic combinatorial libraries as described in GB 2 324 529 (incorporated herein in its entirety).

Example 50: Ligand Binding Assays.

The following assay may be used to assess ligand binding activity of the colon or colon cancer related polypeptides of the invention.

Ligand binding assays provide a direct method for ascertaining receptor pharmacology and are adaptable to a high throughput format. The purified ligand for a colon or colon cancer related polypeptide is radiolabeled to high specific activity (50-2000 Ci/mmol) for binding studies. A determination is then made that the process of radiolabeling does not diminish the activity of the ligand towards its colon or colon cancer related polypeptide. Assay conditions for buffers, ions, pH and other modulators such as nucleotides are optimized to establish a workable signal to noise ratio for both membrane and whole cell colon or colon cancer related polypeptide sources. For these assays, specific colon or colon cancer related polypeptide binding is defined as total associated radioactivity minus the radioactivity measured in the presence of an excess of unlabeled competing ligand. Where possible, more than one competing ligand is used to define residual nonspecific binding.

Example 51: Functional Assay in Xenopus Oocytes.

Capped RNA transcripts from linearized plasmid templates encoding the colon or colon cancer related antigen cDNAs of the invention are synthesized in vitro with RNA polymerases in accordance with standard procedures. In vitro transcripts are suspended in water at a final concentration of 0.2 mg/mi. Ovarian lobes are removed from adult female toads, Stage V defolliculated oocytes are obtained, and RNA transcripts (10 ng/oocytc) are

injected in a 50 nl bolus using a microinjection apparatus. Two electrode voltage clamps are used to measure the currents from individual *Xenopus oocytes* in response to colon cancer antigen or colon cancer antigen agonist exposure. Recordings are made in Ca2+ free Barth's medium at room temperature. The Xenopus system can be used to screen known ligands and tissue/cell extracts for activating ligands.

Example 52: Microphysiometric Assays.

Activation of a wide variety of secondary messenger systems results in extrusion of small amounts of acid from a cell. The acid formed is largely as a result of the increased metabolic activity required to fuel the intracellular signaling process. The pH changes in the media surrounding the cell are very small but are detectable by the CYTOSENSOR microphysiometer (Molecular Devices Ltd., Menlo Park, Calif.). The CYTOSENSOR is thus capable of detecting the activation of a colon cancer antigen which is coupled to an energy utilizing intracellular signaling pathway.

Example 53: Extract/Cell Supernatant Screening.

A large number of mammalian receptors exist for which there remains, as yet, no cognate activating ligand (agonist). Thus, active ligands for these receptors may not be included within the ligands banks as identified to date. Accordingly, the colon cancer antigen of the invention can also be functionally screened (using calcium, cAMP, microphysiometer, oocyte electrophysiology, etc., functional screens) against tissue extracts to identify its natural ligands. Extracts that produce positive functional responses can be sequentially subfractionated until an activating ligand is isolated identified.

Example 54: Calcium and cAMP Functional Assays.

Seven transmembrane receptors which are expressed in HEK 293 cells have been shown to be coupled functionally to activation of PLC and calcium mobilization and/or cAMP stimulation or inhibition. Basal calcium levels in the HEK 293 cells in receptor-transfected or vector control cells were observed to be in the normal, 100 nM to 200 nM,

range. HEK 293 cells expressing recombinant receptors are loaded with fura 2 and in a single day >150 selected ligands or tissue/cell extracts are evaluated for agonist induced calcium mobilization. Similarly, HEK 293 cells expressing recombinant receptors are evaluated for the stimulation or inhibition of cAMP production using standard cAMP quantitation assays. Agonists presenting a calcium transient or cAMP fluctuation are tested in vector control cells to determine if the response is unique to the transfected cells expressing receptor.

Example 55: ATP-binding assay.

The following assay may be used to assess ATP-binding activity of the colon or colon cancer related polypeptides of the invention.

ATP-binding activity of the colon or colon cancer related polypeptides of the invention may be detected using the ATP-binding assay described in U.S. Patent 5, 858, 719, which is herein incorporated by reference in its entirety. Briefly, ATP-binding to colon or colon cancer related polypeptides of the invention is measured via photoaffinity labeling with 8-azido-ATP in a competition assay. Reaction mixtures containing 1 mg/ml of the ABC transport protein of the present invention are incubated with varying concentrations of ATP, or the non-hydrolyzable ATP analog adenyl-5'-imidodiphosphate for 10 minutes at 4°C. A mixture of 8-azido-ATP (Sigma Chem. Corp., St. Louis, MO.) plus 8-azido-ATP (-^{32}P-ATP) (5 mCi/μmol, ICN, Irvine CA.) is added to a final concentration of 100 μM and 0.5 ml aliquots are placed in the wells of a porcelain spot plate on ice. The plate is irradiated using a short wave 254 nm UV lamp at a distance of 2.5 cm from the plate for two one-minute intervals with a one-minute cooling interval in between. The reaction is stopped by addition of dithiothreitol to a final concentration of 2mM. The incubations are subjected to SDS-PAGE electrophoresis, dried, and autoradiographed. Protein bands corresponding to the particular colon or colon cancer related polypeptides of the invention are excised, and the radioactivity quantified. A decrease in radioactivity with increasing ATP or adenly-5'-imidodiphosphate provides a measure of ATP affinity to the colon or colon cancer related polypeptides.

Example 56: Small Molecule Screening.

This invention is particularly useful for screening therapeutic compounds by using the colon or colon cancer related polypeptides of the invention, or binding fragments thereof, in any of a variety of drug screening techniques. The polypeptide or fragment employed in such a test may be affixed to a solid support, expressed on a cell surface, free in solution, or located intracellularly. One method of drug screening utilizes eukaryotic or prokaryotic host cells which are stably transformed with recombinant nucleic acids expressing the polypeptide or fragment. Drugs are screened against such transformed cells in competitive binding assays. One may measure, for example, the formulation of complexes between the agent being tested and a colon or colon cancer related polypeptide of the invention.

Thus, the present invention provides methods of screening for drugs or any other agents which affect activities mediated by the colon or colon cancer related e polypeptides of the invention. These methods comprise contacting such an agent with a colon or colon cancer related polypeptide of the invention or a fragment thereof and assaying for the presence of a complex between the agent and the colon or colon cancer related polypeptides or a fragment thereof, by methods well known in the art. In such a competitive binding assay, the agents to screen are typically labeled. Following incubation, free agent is separated from that present in bound form, and the amount of free or uncomplexed label is a measure of the ability of a particular agent to bind to the colon or colon cancer related polypeptides of the invention.

Another technique for drug screening provides high throughput screening for compounds having suitable binding affinity to the colon or colon cancer related polypeptides of the invention, and is described in great detail in European Patent Application 84/03564, published on September 13, 1984, which is herein incorporated by reference in its entirety. Briefly stated, large numbers of different small molecule test compounds are synthesized on a solid substrate, such as plastic pins or some other surface. The test compounds are reacted with colon or colon cancer related polypeptides of the invention and washed. Bound colon or colon cancer related polypeptides are then detected by methods well known in the art. Purified colon or colon cancer related polypeptides are coated directly onto plates for use in the aforementioned drug screening techniques. In addition, non-neutralizing antibodies may be used to capture the peptide and immobilize it on the solid support.

This invention also contemplates the use of competitive drug screening assays in which neutralizing antibodies capable of binding colon or colon cancer related polypeptides of the invention specifically compete with a test compound for binding to the colon or colon cancer related polypeptides or fragments thereof. In this manner, the antibodies are used to detect the presence of any peptide which shares one or more antigenic epitopes with a colon or colon cancer related polypeptides.

Example 57: Phosphorylation Assay.

In order to assay for phosphorylation activity of the colon or colon cancer related polypeptides of the invention, a phosphorylation assay as described in U.S. Patent 5,958,405 (which is herein incorporated by reference) is utilized. Briefly, phosphorylation activity may be measured by phosphorylation of a protein substrate using gamma-labeled ^{32}P-ATP and quantitation of the incorporated radioactivity using a gamma radioisotope counter. The colon or colon cancer related polypeptides of the invention are incubated with the protein substrate, ^{32}P-ATP, and a kinase buffer. The ^{32}P incorporated into the substrate is then separated from free ^{32}P-ATP by electrophoresis, and the incorporated ^{32}P is counted and compared to a negative control. Radioactivity counts above the negative control are indicative of phosphorylation activity of the colon or colon cancer related polypeptides of the invention.

Example 58: Detection of Phosphorylation Activity (Activation) of Colon or Colon Cancer Related Polypeptides of the Invention in the Presence of Colon or Colon Cancer Related Polypeptides Ligands.

Methods known in the art or described herein may be used to determine the phosphorylation activity of the colon or colon cancer related polypeptides of the invention. A preferred method of determining phosphorylation activity is by the use of the tyrosine phosphorylation assay as described in US 5,817,471 (incorporated herein by reference).

Example 59: Identification Of Signal Transduction Proteins That Interact With Colon or Colon Cancer Related Polypeptides Of The Present Invention.

The inventive purified colon or colon cancer related polypeptides of the invention are research tools for the identification, characterization and purification of additional signal transduction pathway proteins or receptor proteins. Briefly, labeled receptor PTK polypeptide is useful as a reagent for the purification of molecules with which it interacts. In one embodiment of affinity purification, receptor PTK polypeptide is covalently coupled to a chromatography column. Cell-free extract derived from putative target cells, such as carcinoma tissues, is passed over the column, and molecules with appropriate affinity bind to the receptor PTK polypeptides, or specific phosphotyrosine-recognition domains thereof. The receptor PTK polypeptide interacting protein-complex is recovered from the column, dissociated, and the recovered molecule subjected to N-terminal protein sequencing. This amino acid sequence is then used to identify the captured molecule or to design degenerate oligonucleotide probes for cloning the relevant gene from an appropriate cDNA library.

Example 60: IL-6 Bioassay.

To test the proliferative effects of the colon or colon cancer related polypeptides of the invention, the IL-6 Bioassay as described by Marz *et al.* is utilized (*Proc. Natl. Acad. Sci., U.S.A., 95*:3251-56 (1998), which is herein incorporated by reference). Briefly, IL-6 dependent B9 murine cells are washed three times in IL-6 free medium and plated at a concentration of 5,000 cells per well in 50 μl, and 50 μl of the IL-6-like polypeptide is added. After 68 hrs. at 37°C, the number of viable cells is measured by adding the tetrazolium salt thiazolyl blue (MTT) and incubating for a further 4 hrs. at 37°C. B9 cells are lysed by SDS and optical density is measured at 570 nm. Controls containing IL-6 (positive) and no cytokine (negative) are utilized. Enhanced proliferation in the test sample(s) relative to the negative control is indicative of proliferative effects mediated by colon or colon cancer related polypeptides of the invention.

Example 61: Support of Chicken Embryo Neuron Survival.

To test whether sympathetic neuronal cell viability is supported by the colon or colon cancer related polypeptides of the invention, the chicken embryo neuronal survival assay of Senaldi *et al* is utilized (*Proc. Natl. Acad. Sci., U.S.A., 96*:11458-63 (1998), which is herein

incorporated by reference). Briefly, motor and sympathetic neurons are isolated from chicken embryos, resuspended in L15 medium (with 10% FCS, glucose, sodium selenite, progesterone, conalbumin, putrescine, and insulin; Life Technologies, Rockville, MD.) and Dulbecco's modified Eagles medium [with 10% FCS, glutamine, penicillin, and 25 mM Hepes buffer (pH 7.2); Life Technologies, Rockville, MD.], respectively, and incubated at 37°C in 5% CO_2 in the presence of different concentrations of the inventive purified IL-6-like polypeptide, as well as a negative control lacking any cytokine. After 3 days, neuron survival is determined by evaluation of cellular morphology, and through the use of the colorimetric assay of Mosmann (Mossman, T., *J. Immunol. Methods, 65*:55-63 (1983)). Enhanced neuronal cell viability as compared to the controls lacking cytokine is indicative of the ability of the inventive purified IL-6-like polypeptide(s) to enhance the survival of neuronal cells.

Example 62: Assay for Phosphatase Activity.

The following assay may be used to assess serine/threonine phosphatase (PTPase) activity of the colon or colon cancer related polypeptides of the invention.

In order to assay for serine/threonine phosphatase (PTPase) activity, assays can be utilized which are widely known to those skilled in the art. For example, the serine/threonine phosphatase (PSPase) activity is measured using a PSPase assay kit from New England Biolabs, Inc. Myelin basic protein (MyBP), a substrate for PSPase, is phosphorylated on serine and threonine residues with cAMP-dependent Protein Kinase in the presence of [γ-^{32}P]ATP. Protein serine/threonine phosphatase activity is then determined by measuring the release of inorganic phosphate from 32P-labeled MyBP.

Example 63: Interaction of Serine/Threonine Phosphatases with other Proteins.

The colon or colon cancer related polypeptides of the invention with serine/threonine phosphatase acitivity as determined in Example 62 are research tools for the identification, characterization and purification of additional interacting proteins or receptor proteins, or other signal transduction pathway proteins. Briefly, a labeled colon or colon cancer related polypeptides of the invention is useful as a reagent for the purification of molecules with

which it interacts. In one embodiment of affinity purification, colon or colon cancer related polypeptides of the invention is covalently coupled to a chromatography column. Cell-free extract derived from putative target cells, such as neural or liver cells, is passed over the column, and molecules with appropriate affinity bind to the colon or colon cancer related polypeptides of the invention. The colon or colon cancer related polypeptides of the invention-complex is recovered from the column, dissociated, and the recovered molecule subjected to N-terminal protein sequencing. This amino acid sequence is then used to identify the captured molecule or to design degenerate oligonucleotide probes for cloning the relevant gene from an appropriate cDNA library.

Example 64: Assaying for Heparanase Activity.

In order to assay for heparanase activity of the colon or colon cancer related polypeptides of the invention, the heparanase assay described by Vlodavsky et al is utilized (Vlodavsky, I., et al., Nat. Med., 5:793-802 (1999)). Briefly, cell lysates, conditioned media or intact cells (1×10^6 cells per 35-mm dish) are incubated for 18 hrs at 37°C, pH 6.2-6.6, with ^{35}S-labeled ECM or soluble ECM derived peak I proteoglycans. The incubation medium is centrifuged and the supernatant is analyzed by gel filtration on a Sepharose CL-6B column (0.9 x 30 cm). Fractions are eluted with PBS and their radioactivity is measured. Degradation fragments of heparan sulfate side chains are eluted from Sepharose 6B at $0.5 < K_{av} < 0.8$ (peak II). Each experiment is done at least three times. Degradation fragments corresponding to "peak II," as described by Vlodavsky et al., is indicative of the activity of the colon or colon cancer related polypeptides of the invention in cleaving heparan sulfate.

Example 65: Immobilization of biomolecules.

This method provides a method for the stabilization of colon or colon cancer related polypeptides of the invention in non-host cell lipid bilayer constucts (see, e.g., Bieri et al., Nature Biotech 17:1105-1108 (1999), hereby incorporated by reference in its entirety herein) which can be adapted for the study of colon or colon cancer related polypeptides of the invention in the various functional assays described above. Briefly, carbohydrate-specific chemistry for biotinylation is used to confine a biotin tag to the extracellular domain of the

colon or colon cancer related polypeptides of the invention, thus allowing uniform orientation upon immobilization. A 50uM solution of colon or colon cancer related polypeptides of the invention in washed membranes is incubated with 20 mM NaIO4 and 1.5 mg/ml (4mM) BACH or 2 mg/ml (7.5mM) biotin-hydrazide for 1 hr at room temperature (reaction volume, 150ul). Then the sample is dialyzed (Pierce Slidealizer Cassett, 10 kDa cutoff; Pierce Chemical Co., Rockford IL) at 4C first for 5 h, exchanging the buffer after each hour, and finally for 12 h against 500 ml buffer R (0.15 M NaCl, 1 mM MgCl2, 10 mM sodium phosphate, pH7). Just before addition into a cuvette, the sample is diluted 1:5 in buffer ROG50 (Buffer R supplemented with 50 mM octylglucoside).

It will be clear that the invention may be practiced otherwise than as particularly described in the foregoing description and examples. Numerous modifications and variations of the present invention are possible in light of the above teachings and, therefore, are within the scope of the appended claims.

The entire disclosure of each document cited (including patents, patent applications, journal articles, abstracts, laboratory manuals, books, or other disclosures) in the Background of the Invention, Detailed Description, and Examples is hereby incorporated herein by reference. Further, the hard copy of the sequence listing submitted herewith and the corresponding computer readable form are both incorporated herein by reference in their entireties. Moreover, the hard copy of and the corresponding computer readable form of the Sequence Listing of U.S. Patent Application Serial No. 60/157,137 and 60/163,280 are also incorporated herein by reference in its entirety.

Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

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D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

Continued on the Attached Pages 2 & 3

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
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ATCC Deposit No. 209061
Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

ATCC Deposit No. 209061
Page 3

DENMARK

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SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209062

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

Continued on the Attached Pages 2 & 3

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Form PCT/RO/134 (July 1992)

ATCC Deposit No. 209062
Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No. 209062
Page 3

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209063

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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ATCC Deposit No. 209063
Page 2

CANADA

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NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No. 209063
Page 3

DENMARK

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SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209064

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).
Continued on the Attached Pages 2 & 3

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No. 209064
Page 3

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13 *bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209065

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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Continued on the Attached Pages 2 & 3

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Authorized officer	Authorized officer

ATCC Deposit No. 209065
Page 2

CANADA

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UNITED KINGDOM

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ATCC Deposit No. 209065
Page 3

DENMARK

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

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Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209066

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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ATCC Deposit No. 209066
Page 2

CANADA

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Page 3

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209067

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

Continued on the Attached Pages 2 & 3

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No. 209067
Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No. 209067
Page 3

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

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Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209068

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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ATCC Deposit No. 209068
Page 2

CANADA

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NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No. 209068
Page 3

DENMARK

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NETHERLANDS

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13 *bis*)

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B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
20 May 1997	209069

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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Continued on the Attached Pages 2 & 3

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ATCC Deposit No. 209069
Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No. 209069
Page 3

DENMARK

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SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
12 January 1998	209579

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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ATCC Deposit No. 209579
Page 2

CANADA

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NORWAY

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No. 209579
Page 3

DENMARK

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

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Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
12 January 1998	209578

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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ATCC Deposit No. 209578
Page 2

CANADA

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UNITED KINGDOM

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ATCC Deposit No. 209578
Page 3

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13 *bis*)

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Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
16 July 1998	203067

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

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Authorized officer	Authorized officer

ATCC Deposit No. 203067
Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

ATCC Deposit No. 203067
Page 3

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
16 July 1998	203068

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).
Continued on the Attached Pages 2 & 3

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☐ This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

ATCC Deposit No. 203068
Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No. 203068
Page 3

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
01 February 1999	203609

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

Continued on the Attached Pages 2 & 3

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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ATCC Deposit No. 203609
Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No. 203609
Page 3

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
01 February 1999	203610

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

Continued on the Attached Pages 2 & 3

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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For receiving Office use only	For International Bureau use only
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ATCC Deposit No. 203610
Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

ATCC Deposit No. 203610
Page 3

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet [X]

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
17 November 1998	203485

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet [ ]

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).
Continued on the Attached Pages 2 & 3

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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For receiving Office use only	For International Bureau use only
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ATCC Deposit No. 203485
Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No. 203485
Page 3

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet [X]

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
18 June 1999	PTA-252

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet [ ]

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

Continued on the Attached Pages 2 & 3

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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For receiving Office use only	For International Bureau use only
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Authorized officer	Authorized officer

ATCC Deposit No. PTA-252
Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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UNITED KINGDOM

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ATCC Deposit No. PTA-252
Page 3

DENMARK

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NETHERLANDS

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description on page 311, line N/A.

B. IDENTIFICATION OF DEPOSIT — Further deposits are identified on an additional sheet ☒

Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
18 June 1999	PTA-253

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

Continued on the Attached Pages 2 & 3

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

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ATCC Deposit No. PTA-253
Page 2

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

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ATCC Deposit No. PTA-253
Page 3

DENMARK

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SWEDEN

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

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Name of depositary institution American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
28 October 1999	PTA-881

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* — This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).

Continued on the Attached Pages 2 & 3

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ATCC Deposit No. PTA-881
Page 2

CANADA

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ATCC Deposit No. PTA-881
Page 3

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Applicant's or agent's file reference number	PA005PCT	International application No.	UNASSIGNED

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Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
28 October 1999	PTA-882

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

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Continued on the Attached Pages 2 & 3

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ATCC Deposit No. PTA-882
Page 2

CANADA

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ATCC Deposit No. PTA-882
Page 3

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What Is Claimed Is:

1. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a polynucleotide fragment of SEQ ID NO:X which is hybridizable to SEQ ID NO:X;

(b) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y which is hybridizable to SEQ ID NO:X;

(c) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y which is hybridizable to SEQ ID NO:X;

(d) a polynucleotide encoding a polypeptide epitope of SEQ ID NO:Y which is hybridizable to SEQ ID NO:X;

(e) a polynucleotide encoding a polypeptide of SEQ ID NO:Y which is hybridizable to SEQ ID NO:X, having biological activity;

(f) a polynucleotide which is a variant of SEQ ID NO:X;

(g) a polynucleotide which is an allelic variant of SEQ ID NO:X;

(h) a polynucleotide which encodes a species homologue of the SEQ ID NO:Y;

(i) a polynucleotide capable of hybridizing under stringent conditions to any one of the polynucleotides specified in (a)-(h), wherein said polynucleotide does not hybridize under stringent conditions to a nucleic acid molecule having a nucleotide sequence of only A residues or of only T residues.

2. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding a protein.

3. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding the sequence identified as SEQ ID NO:Y, which is hybridizable to SEQ ID NO:X.

4. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises the entire nucleotide sequence of SEQ ID NO:X, which is hybridizable to SEQ ID NO:X.

5. The isolated nucleic acid molecule of claim 2, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

6. The isolated nucleic acid molecule of claim 3, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

7. A recombinant vector comprising the isolated nucleic acid molecule of claim 1.

8. A method of making a recombinant host cell comprising the isolated nucleic acid molecule of claim 1.

9. A recombinant host cell produced by the method of claim 8.

10. The recombinant host cell of claim 9 comprising vector sequences.

11. An isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a polypeptide fragment of SEQ ID NO:Y;

(b) a polypeptide fragment of SEQ ID NO:Y, having biological activity;

(c) a polypeptide domain of SEQ ID NO:Y;

(d) a polypeptide epitope of SEQ ID NO:Y;

(e) a full length protein of SEQ ID NO:Y;

(f) a variant of SEQ ID NO:Y;

(g) an allelic variant of SEQ ID NO:Y; or

(h) a species homologue of the SEQ ID NO:Y.

12. The isolated polypeptide of claim 11, wherein the full length protein comprises sequential amino acid deletions from either the C-terminus or the N-terminus.

13. An isolated antibody that binds specifically to the isolated polypeptide of claim 11.

14. A recombinant host cell that expresses the isolated polypeptide of claim 11.

15. A method of making an isolated polypeptide comprising:

(a) culturing the recombinant host cell of claim 14 under conditions such that said polypeptide is expressed; and

(b) recovering said polypeptide.

16. The polypeptide produced by claim 15.

17. A method for preventing, treating, or ameliorating a medical condition, comprising administering to a mammalian subject a therapeutically effective amount of the polypeptide of claim 11 or the polynucleotide of claim 1.

18. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

(a) determining the presence or absence of a mutation in the polynucleotide of claim 1; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or absence of said mutation.

19. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

(a) determining the presence or amount of expression of the polypeptide of claim 11 in a biological sample; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or amount of expression of the polypeptide.

20. A method for identifying a binding partner to the polypeptide of claim 11 comprising:

(a) contacting the polypeptide of claim 11 with a binding partner; and

(b) determining whether the binding partner effects an activity of the polypeptide.

21. The gene corresponding to the cDNA sequence of SEQ ID NO:Y.

22. A method of identifying an activity in a biological assay, wherein the method comprises:

(a) expressing SEQ ID NO:X in a cell;

(b) isolating the supernatant;

(c) detecting an activity in a biological assay; and

(d) identifying the protein in the supernatant having the activity.

23. The product produced by the method of claim 20.

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ttttggccat tctaatggat atgtagcggt atctcattat tttaatttgc attttcttga 1380
tgacatatga tgtcgagcat ctcttcatat gcgtatccat ctgtatacct nctttggtga 1440
ggtgtctgtt aaggtctntg atncatttta atgcttcttt gttaggggta gatacatgta 1500
aaggatatgt cttcttggag aattgactcc tttatcctta tataataatc ctctttgttc 1560
cttgtaactt gcattgctgt gcaatttgct ctttctgaaa ttagcacaat tgacccttga 1620
atgacatgga ggttaggggc acaaatgaaa atctgtgtat aactttttat tcatctataa 1680
cttaactttt aaacccattt aacctccccc caaaattcag gaataataac acacccgacc 1740
acaccgctta caaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1800
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa                   1843
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<210> 5
<211> 471
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (161)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (428)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (471)
<223> n equals a,t,g, or c

<400> 5

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ggaagaagcc cagaggttgt gcccaggggc agaaatcatt gcctagtgtt caccggctga 60
ctctcaactg accattccca tgtggacagg ccttaatact gtgagaggat ccttgctctg 120
ctggcagttt cccactccta tgcactttca caggaactag naaaactatt cttaaaccaa 180
aaataccatc cgtgttgacc catgttgcag agcccttact taaatccttc actggtgtat 240
gaatactttg tcataatgct gctttgctgg gtagtgagct cttatttttc actgggggtc 300
agctataact aaaaactcaa gtgacatatt tcagttacca aagtggccag gaactttttg 360
cttttatgaa aatagattca tattgtattt cccagtgtgt cttytatgtc tttgaatgtt 420
ttagaganaa gtctatgcct gtctaaaaat gaatccagtg ttgcctttct n          471
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<210> 6
<211> 905

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (836)
<223> n equals a,t,g, or c

<400> 6
gttctagatc gcgagcggcc gcccttttt ttttttgatt tatatgaact tgcaaatcat 60
atatattaac cttttgttat gtggagattt tggacaggag gattgcttga ggccaggaat 120
tcaagaccag cctgggaaac aaagtgagac cctgtcttta caaaaaataa aaacaaaaat 180
ttaaaactgt ataatctgca ctttatgcta aactagctgt gctcttaaac tcaatttttt 240
cagctctaat aaagggctta atttgataga attattctac gattaaattt tgaagactgt 300
tttcactctc ctctgccgcc catagcaaga ctgcttccat agatttctca gaaccgtagc 360
cagttctggc tatttggtca agtctgggat ccctcttacc tgctattctg cagctgcttt 420
ctctgtctta catttttttgg gccacgtcta atcttaaaga gtaaactcta cccttggttt 480
gcatagtgtg catgacaaaa ataacaagaa taatggtaat gatgaaaatg ataagagcaa 540
aatttgtgga gtgctttcca cattccaggt aatgtgtaac atacaattta attcttacag 600
cagtcttatg gagtgaaaat actattatga attcccgttt tacagatgaa agaatggagg 660
cacagaaaag ttacttgtct aagtaacagt ctatccttaa agtccacagt cttaaccact 720
tggatttttc atagtgaggg aaaatatccc agaaagttgc agtttcaatt aatcactgaa 780
ttgtagggta atttaactat accagtgaag tgcctactga gcagaaatat ttgggncaac 840
atgaagccca ctggactggg agcttttgtt ttagcataat gaacctgttt ccagcaagat 900
tttga 905

<210> 7
<211> 412
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (108)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (372)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (377)
<223> n equals a,t,g, or c

<400> 7
aattcggcac gaggaaactt gctattccac ccacaccaag ttaaaaagga aaaaaaaaag 60
actttcgcac aattgtttcc taactgataa cattgtacat tcttaggnga ttagtaattg 120
tgtgaaattt actcatactg tttctaagtt tttcagcata gtcattgcac ttcagcaggg 180
aatctgagta tactttacag acagagtgaa cttaaaagtt taatgtcaag agattatggc 240

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ttaaataaat tagtgtgtcc tatagggga aaaaaaccaa gaaaccacct tttaaaaaga 300
atgatatgcc atataccctt ggattttcat tttgcattat attgacgtgt tttttgaag 360
ggaaaaaaag tnataanaat ctggatagtc taagactcca ctattttaaa ag         412

<210> 8
<211> 752
<212> DNA
<213> Homo sapiens

<400> 8
actgaacagt ggttaatcct gactctgttt ttgactgaca gttaacagtt acatgaacca 60
ttcatattac agctcttact taaatttgac caagccagga tatatctgtt aggccacatt 120
catttaggga tcatgttttc caaagcaggt ttgggcaaaa ttaatccaca ggactgaaag 180
gtatacatct gtgagttttg ttctcacttc cacctctaat ttgaagaaca ctttaattga 240
cacagaatac atttcacata tttaacctct acaataagtt ctgacacatt ttccatgaaa 300
caaaccatcg ctatattcaa gataatgaac ctatctatca tactcccaaa ttccttctkg 360
catctttgta atttctcact cttccttctc cctctccccg tcccatccca accactgatc 420
tgctcaggca actaccaatc ttctttctgt cactatagat taatttgcat ttttaaagaa 480
atttacatac atggaaccat acatcatcta tgctttgtag tatgactcct gtcactcagt 540
acaattattt tgagattcat ttatgttawt gtatgtatca atagttcatc ccttttattg 600
gtaagtaaca ttttttgta taggtatacc atgatttgtt gatgaacaaa tttacctgtt 660
gatgaacatt tacgttgtta ccaagatttt tgctattgaa aataaagttt ttatgaatat 720
ttatatatat aaaaaaaaaa aaaaaaactc ga                               752

<210> 9
<211> 642
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (613)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (622)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (635)
<223> n equals a,t,g, or c

<400> 9
ggcagaggtg ctactggaag caatacgaaa aggtattcag ctacgcaaag tagaagagca 60
gcgtgaacag gaagctaagc atgaacgcat tgaaaacgat gttgccacca tcctgtctcg 120
ccgtattgct gttgaatata gtgattcgga agatgattca gaatttgatg aagtagattg 180
gttggagtaa gaaaaatgca ttgataaata ttacaaaact gaatgcaaat gtcctttgtg 240
gtgcttgttc cttgaaaatg tttggtcatt ctagtgtttt gctttctttt ccttataata 300
aatgaccctt ttcctccata acttttgatt tctaaggaaa atattagcat acatttcaaa 360
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ctaaatgttt tacagtggct tatctttttt ttccccctga aaagactaat ttggtcaaat 420
aaaccactaa gtattaagca tgggacagct gttgttagga gtagccagat tcagtttttt 480
ggatatatct taattgtgta ctttgtggaa ttttaaattt aaaggaaagg caactggaaa 540
ttggaaatcy tgaggggcag ctgtatctac taatgaggcc ttattccctt tcccggatgt 600
tttaaaggag ggnacactgc cntggattat acggntacac cc 642

<210> 10
<211> 211
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (210)
<223> n equals a,t,g, or c

<400> 10
tctttttctc tcccactttt tcatattcct ctttttcatt tttgcctttc cgtttctgtc 60
tatgatgtag gcttctgagg agaaccmaga agcttggctt tagtggtaga atgacagrac 120
ttagggatcc cttgcaggct agaacaaagt tctgaccctt agaccaaatc tttatgttaa 180
gaagttttcc agaattcaaa aaaaaaaaan t 211

<210> 11
<211> 532
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (515)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (517)
<223> n equals a,t,g, or c

<400> 11
taagagatca aagcttataa ttttcttttt taatttttga aggagggatc aactccagtt 60
tccaatgtct atgtgtctat gtgtgtatgt gccatacata tgtattcaca tgaagaccgg 120
catggccaag ttctgctgga ggagcactca agtgtgacga gcagggccac tggaccctgc 180
agggctgtgg tgtatatagt gcagctttgg aggtggaact ctattttcac acttttctat 240
ggagccttcc gagtcccagg ttttcacttg aggctgtctg tctggatggc ggttttcaga 300
cctccattaa catccctacc cagcattctg tacttcgggg gccttctctc ttgttataaa 360
actttttacc aagtgaaaca tcgataccac ctttgtttcc attctcactg gtgtaaatac 420
tgagtactaa ctgagaattt tgactttgca ttctgtcgga atacttgtgt tcaataaaaa 480
ttgaaagaaa aaagctaaaa aaaaaaaaaa aaaancncga gggggggccc gg 532

<210> 12
<211> 1120
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (711)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (946)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (987)
<223> n equals a,t,g, or c

<400> 12
cataaacatt gatgttgggt caatcatgtt ctcaatgtat ttaaccatgt gtttttaaat 60
tttttaattt agttatcaaa ttgagaatct gatggtatgg cattaatcac cttgaggaag 120
aacctttatc gtttatctga ttttcagatg catagagctc tggctgcttt aaaaaataaa 180
cctctaaatc atgttcacaa ggtagtcaag gagcgtctgt gcccttggtt gtgttcacga 240
caacctgagc ctttcggggt cagattccat catgcccatt gtaaaaagtt tcattcgaaa 300
aatggaaatg accttcatcc actcggtgga ccagtgttct ctcaagtatc tgactgcgac 360
aggcttgaac aaaatgttaa aaatgaggag agtcagatgt tttacaggag actgagcaac 420
ttgacttcat cagaagaagt gctaagtttt ataagcacga tggaaaccct gcctgacact 480
atggcagcag gagctttaca acggatttgt gaagtggaaa aaaaggatgg tgatcaaggg 540
ctgccaaaag raatactgga gaatagcatc tttcaagctt tatgctttca gtttgaaaag 600
gagccctcac agctgtcaaa cactagttta gtgactgctt tkcaagctct gattctgttg 660
catgtggatc ctcaaagtag cctgttgctg aacctggtgg cagaatgcaa naatcgtctc 720
agaaaaggtg gcatggaagt tcgcaatctt tgtattcttg gggaaagtct gattacactg 780
cacagttcag gttgtgtgac actagaactc attataaatc aacttcaagg tgaaaaattg 840
gaaacattta ccccggagga tattgtggcc ctttatagaa tcttgcaggc atgtactgaa 900
aaagtggatg aacaccaaac atttttaaat aagataaaca actttnccct atcaatagtt 960
tccaacctga gtcctaaatt gattagncaa atgctcactg ccctggtggt tcttgatcaa 1020
agtcaagcat ttcctctgat tataaaattg ggcaaaatat gtcgtgaggc atgtcccaca 1080
tttcacttaa cgaggagctt aggagagtct tttgaggcgt 1120

<210> 13
<211> 600
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (50)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (571)

<223> n equals a,t,g, or c

<400> 13
ctagatcgtc agggaggaag ggtcagttgg gtgcctgttt ttctgttttn agtcctttaa 60
aatgagtaga agcaacctgt taccctggaa agagcactgg acatagacct agtgctgcgt 120
gatgttgagc acgtttcttc ttccctttga gtcccagttt cccttttggt tacaggggga 180
tagtagcccc cagggatcat gtgaaagtga gaaagccctt ttcacactgt ggagcggtgc 240
agatgtggga aacctcaaag atggttgccc attttaaatc ctttcatctc tcatctctct 300
ttcttctctc ccttctgccc tgacgtagcc atggttgggt gggtgaggcc agaagaaact 360
gcctccgmaa gaggtagcag ccgctcaggt ggctctgctg gcatcggagc ccacagaagt 420
gaggagtggc cgatggamct gccctccaaa tgtgcctgac tctgggtctt gctgtcactg 480
ggatttcctg ggcatggcag acagaaagaa agatagtttg accaagtcgt aggaagcttg 540
attccagcgg gtaaaaaagg gggcagggaa ntcgtccctt ttattttttg ccttcaggag 600

<210> 14
<211> 807
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (773)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (786)
<223> n equals a,t,g, or c

<400> 14
caattaaggg tgtacaaatt ataataatgc atctctatct tcatactttg aatggcaaac 60
gctatttatg cataaatatt ttcattttaa gtaatatatg aagtgtaaat actcgatata 120
taagtataga ttttaaagat atgggacttt attttcacat aagtcaatag atgtttctct 180
agaacaaaat atttagtaaa gctttataaa ttatattaaa aggaagcggg gaacatgtat 240
tttttaacat agaacagaag tgacttcatt ctttttagac atcagaaatg ttaaagttga 300
ttcccaatat ttgttgtact tttttgtagc aaatgttaaa aatcacgagt taccatgtat 360
agaatgtgga ctgtcatgtt gatatcattg tacagtgata agccattttw atctgtatac 420
atttcaccaa tttattaaca ggttgaatat ttgtttcttt ttagaacatt ttatttatac 480
tgtgaagact ttgttatacc ttatttgcta caacatagat catatcattg ctactttgac 540
ttagcatttg catcataaac ataattatga tgttttttc atgctccttc caggggctca 600
gtcacttgaa gaaactgttg ctaaccaagc tcttgactct gtttccctta atgatacaag 660
tctctgtacc agcgctttat gttaattacc aaaactctcc tgcatcagag catgatatct 720
ataataggag atactgsaat aaaatgrttw ggctgtaaaa atttggaggc acnaattttc 780
caattncaat ggcaaattgg catggtg 807

<210> 15
<211> 416
<212> DNA
<213> Homo sapiens

<220>

<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<400> 15
ngttttggga ttattataag ttcttgtgtc ttaaggccat ctgcttttat atccagtgat 60
gtgggatttt aatcagccat taattaggta agcattcact ttgaggacaa tattctgttt 120
tatcttgggt agcatggaca gtttgtcaca gaaataagtt ccctattcaa acttggaatt 180
agctgattca gagtaacata ttaataatat aaaaatggcc ataccctttt atggcgtaac 240
attatttcta ggtattgttt ctaaggaaat aattttaaat attgggaaaa aatattttta 300
caatttacag tctgtctgac atttggtaaa tagctaattg tgatatattc atattaggag 360
atagggtgca gccactaaaa tgattttgaa gtattgtcca ttagtaatgg taattt 416

<210> 16
<211> 752
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<400> 16
ggcctgggct ccttccgaat ggtggcgcct ctgagccagn tttcgaggag gagtcggagg 60
aggagcctga atgtttggag atagacttca agtcccggac cttatccgtg cgccgcttcg 120
gtttgcaggt gacctttgcg tgcgggcgcc ccttctgatt gaccctgatg agctgtagct 180
ctgatggccc ctccttcggg aatgattagg gtgacggctg kccggggctc gttcgagtgg 240
cgcccggccg gtggtgaccc gaacaggaga gcgggacggc gaccattctc tcgggagggs 300
cccatytgga gaaagtcctc tcgcttggtc aaactaggag ggcgatagca ccggccttac 360
tgcgacgatg acaaagtaca acacaccgtc tggcgcgaag gagatgctcg agaacccttt 420
gctgttgtta tttttcgcgt gtcctccgaa accaagggaa atgcggctct gtgggttctg 480
ttaacgtcag catttaataa gtgaactcta aatgcattgc cccttatggg tgcgctggcc 540
tcctgagttg actcagctct tgcaacgtag ctagttgata accctcgaaa tatagcgaat 600
tgagatgtgc tatattgtaa aatacgggac ttagtacgaa aaaactgatg taaaaattat 660
ctcaatactt tttaatactg attacatgtt ggaatataat gttttgcata tattgggtca 720
aataaaaatg ttattaattt caaaaaaaaa aa 752

<210> 17
<211> 481
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (442)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (447)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (448)
<223> n equals a,t,g, or c

<400> 17
ggcacgagtt tcaaaccaac actgaaattc tgtggcatca catatattgg gccttgatgt 60
catgacagak caaaatcatt tgatatccct ttctccattc taggtttttc tttttttcag 120
taactgattt accttgatca cttttcaact tccatattct tcatatagta aaaggcaaag 180
tgttgaagat actacggtgt ggtagtagtt gaaaattatt gccgtcatta tttacatact 240
taagacatat tagcaagttg atccaaaatg ggaggcctta tagatgtgct tgggggaaaa 300
tgaaggggag aaagtagcca tacaggagtt caaagaattc catgcccttc agattagccc 360
attaccagaa acatcatgaa agtattttaa aaactaatta tttactacag tgtatttcac 420
ttgtcttgtg tgtctgaaca cnagganngc taaattagca agttttttaa ggaggtattt 480
t 481

<210> 18
<211> 912
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (875)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (881)
<223> n equals a,t,g, or c

<400> 18
aattcggcac aggatcagac ttcctttcaa ctgtcctccc ctccaagcag accacctgtc 60
cccttctatc ccagctcaga gcagctgacc caactcagaa tctctttcct acaggatgaa 120
gtgccttttg aatgttattt taagccgaga gttaattttt ctacacaaca tatttccaga 180
catcttttag tcttttattg tcttagatac tataagaaga tgaacatgac aattttctag 240
aacctggtag cgtgtgtgtg tgtggcgggg ggtgctgagg gaggggagtg agtcacagga 300
gcctgtcccc caacaggtgt gactgctctg acaacctgtg gcatgctgca gggtcaggct 360
cctgatagga ggatttcatg actatgtcat tgtctccact catttttgac ccagtttgga 420
atgtatctgc aattgtgtgg ctcaacactt taggaaacaa tagattattt tatattatta 480
tttctgatgg tgacaagttt gtcttgaggt cacattttct ccttgaaaag tgacatcctg 540
tcacttctgc tctcacacta ctgccataca tttgtgtttt ttgttgttat tgtttgggta 600
gagcagttac aagaaaccct aaaacccttg gatataaaag aaatctgttt attgattttt 660
aaatctttcc tttccaaaag ctgggataca catgggagct gtttggggaa ttttccttgc 720
tgctaccgcg ctgccaccaa atgggaattg accaggcggg ctgtttacac tgtttctttg 780
gccactgtgg ccyatggctc aggaatatgg ctcactggct aaggcttacc aaactcgggg 840
acagggggtc agggaaacag gaggggtgtt ccccntcccc nttggcaggc cttcccaccc 900
acctggttaa cc 912

<210> 19
<211> 507
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (489)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (492)
<223> n equals a,t,g, or c

<400> 19
ggatacatag gaagttgacc tcggggtatc atggagagtg tccctcctag tggctggagg 60
tagggacagt tggttgtggg gctggagaga ggttgtgggg aggaagcgag gatgcgtgcc 120
tgccactagg atctgcatcc ccgagcccaa gccaggaggg atttccctta ggcaacacca 180
tcccagggag atctgccaca atttgcgttt cacagctraa gacgccgagg cttagagagc 240
tcgacctcct caaggtcaca ccactgggta aatagaggga tgcagactca ggttttgcta 300
tgtgctcaca tttcaacttt atgcttaaca tgaatggaaa aatatgaaag taaatagtga 360
aaaggtgagt tatgagctta gattacctag attattccag tatcccatgg aagctgagga 420
cttattccgc tttccacacc gaacactaaa tgtggaccag tatcaagaac cctcctgtcc 480
ccacgcagnt anaacccagt ggcttct 507

<210> 20
<211> 410
<212> DNA
<213> Homo sapiens

<400> 20
ggcagagcca aaagagggtt cttggatctc acgcaacaaa gagttcgggg cgagtccata 60
gagtaaagtg aaagcaagtt catcaagaaa gcaaaggaat aaagaatgcc tactccatag 120
gcagagcagt ggctttggct gctcagctgc ttgtacttgt tacttcttga gtatatgcta 180
aacaagggat tgattactcc ttgtttagca gttttctggg aaaggagtgg gcaattccca 240
gaactgaggg ttcctcccct ttttaagacc atattagggt gacttcctga tgttgccatg 300
gcatttgtaa actgtcatgg cgctrtgggw gtgtctttta gcatgctaat gctttataat 360
tagcgtataa tgagcagtga ggacaaccag aggtcactct tgtctgtgcc 410

<210> 21
<211> 496
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (36)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (356)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (443)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (454)
<223> n equals a,t,g, or c

<400> 21
ggcacgaggg cacsmkcaaa ccttgtcttc cctctnctgt tgcatccttt ccctaccctt 60
ccctcccagg tgctcggtac tttaccwagt ttctatatat cagtgtttta tgttggaatt 120
tttccttgtt tttattttac tagttggtaa accctgttta tgctgaaaca aataaggaaa 180
tggtatattt gaccatatgt gttattcata gaagacagta tgatcaaatg tgccaaaaac 240
aagcaaacaa aacttaattc ctgrgaagta tgccttattt ttattgatct gctttgtctt 300
acaattaagg tccaagagct tggttaaact gtattatttg cctaagtata aaaganaact 360
tgaactgcat tgcaatattg acgttcttta aaatgagaga cactgtcaag taatttaatc 420
cagagatcag ccaccagatt tgnaatgcct atgnatgtgt gtgtgttggg agtggttttt 480
tcctttaaac caccca 496

<210> 22
<211> 363
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (313)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (333)
<223> n equals a,t,g, or c

<400> 22
ggcacgagta taaatgatgg tgtggatgtc agggtgaggg aggagacaaa accacgatga 60
cccctagctt tgtggcctga actgtgggtg gctgagggga tcgttaattg aatggggcag 120
actgaggctt gtraggaaga tcagagtctg gttcttgaca tgagatgccc ttcaaacatc 180
tcttcactca ggtgcaacta gggatacaga aacactgkat atttcaacag cagaaattga 240
atggggggat tgatagcsct ggcgagggaa gcagctggta aagaagacag atggcacccct 300
gagacagccc agnggtggaa taggaccccc agngtgcagg gattaaagtt ccatgggttg 360
gtg 363

<210> 23
<211> 239

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (238)
<223> n equals a,t,g, or c

<400> 23
ctcaggctgc tgcacgtggs catccgcatc cggcctttyt tcgacagttt gaccgtggag 60
agcgcggacc tgcagggctg ctgctttgct gggcctggca gcccccaccc gagaagatgg 120
agttccggac ggcatctatc cgcctctttg ggcacttaac aaggtctgcc acggagactg 180
taaggacgtc ttcctggacc aagtggtggg cgggctggcg ccctgctgct gcacctgna 239

<210> 24
<211> 461
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (426)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (428)
<223> n equals a,t,g, or c

<400> 24
aacaattaag tctttaggaa tgtgtaacca gaactatgtt agtattgctt ataaaacttt 60
agttaggttc aatatataca tatatacatc tctatatagg tatatagatt tgcattttgt 120
cttgtaaaat tttatttgaa taaattcttc ctgtaggtaa tgggaaacaa aattaatagt 180
tcatatgtca ctcatagcat ttctatattt gaaagtagcc caatataaaa cttttgattc 240
taaaattaaa ccagcagcct attacaagca cattctttga ttgagtcatt ggttataaac 300
ttactaaatg cagrgraagc agccaattta gggaaacttc tgagttggtg gggacactgt 360
tggattaata atgtacggta tgaattaagt gatgccttaa cttggatttt acattttaag 420
gttaangngg gggcatatgg tcagccaact tagggggcat t 461

<210> 25
<211> 453
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (442)
<223> n equals a,t,g, or c

<400> 25
accagaccaa ccctatgaat ggctttcata taaacaggtt gcagaattgt cggagtgcat 60

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aggctcagca ctgatccaga agggcttcaa gactgcccca gatcagttca ttggcatctt 120
tgctcaaaat agacctgagt gggtgattat tgaacaagga tgctttgctt attcgatggt 180
gatcgttcca ctttatgata cccttggaaa tgaagccatc acgtacatag tcaacaaagc 240
tgaactctct ctggtttttg ttgacaagcc agagaaggcc aaactcttat tagagggtgt 300
agaaaataag ttaataccag gccttaaaat catagttgtc atggatgcct acggmagtaa 360
ctggtggaac gaggccagag gtgtggggtg gaagtcacca gcatgaaggc gatggaggac 420
ctgggaagag ccaacagacg gnagcccaag cct                              453
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<210> 26
<211> 1940
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (576)
<223> n equals a,t,g, or c

<400> 26

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gctgctacag tgctgcccag tgcttgcccg gggccccaca agcctcctag gcaaggtggt 120
taagactcac cagttcctgt ttggtattgg acgctgtccc atcctggcta cccaaggacc 180
aaactgttct caaatccacc ttaaggcaac aaaggctgga ggagattctc catcttgggc 240
gaagggccac tgtcccttca tgctgtcgga actccaggat gggaagagca agattgtgca 300
gaaggcagcc ccagaagtcc aggaagatgt gaaggctttc aagacagatc tgcctagctc 360
cctggtctca gtcagcctaa ggaagccatt ttccggtccc caggagcagg agcagatctc 420
tgggaaggtc acacacctga ttcagaacaa tatgcctgga aactatgtct tcagttatga 480
ccagtttttc agggacaaga tcatggagaa gaaacaggat cacacctacc gtgtgttcaa 540
gactgtgaac cgctgggctg atgcatatcc ctttgnccca acatttctct gaggcatctg 600
tggcctcaaa ggatgtgtcc gtctggtgta gtaatgatta cctggggcat gagccgacac 660
cctcaggtct tgcaagccac acaggagacc ctgcagcgtc atggtgctgg agctggtggc 720
acccgcaaca tctcaggcac cagtaagttt catgtggagc ttgagcagga gctggctgag 780
ctgcaccaga aggactcagc cctgctcttc tcctcctgct ttgttgccaa tgactctact 840
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gcttccatga tccaaggtat ccgtaacagt ggagcagcca agtttgtctt caggcacaat 960
gaccctgacc acctaaagaa acttctagag aagtctaacc ctaagatacc caaaattgtg 1020
gcctttgaga ctgtccactc catggatggt gccatctgtc ccctcgagga gttgtgtgat 1080
gtgtcccacc agtatggggc cctgaccttc gtggatgagg tccatgctgt aggactgtat 1140
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tctggaactc ttggcaaggc ctttggctgt gtgggcggct acattgccag cacccgtgac 1260
ttggtggaca tggtgcgctc ctatgctgca ggcttcatct ttaccacttc tctgcccccc 1320
atggtgctct ctggagctct agaatctgtg cggctgctca agggagagga gggccaagcc 1380
ctgaggcgag cccaccagcg caatgtcaag cacatgcgcc actactcatg gacaggggcc 1440
ttcctgtcat cccctgcccc agccacatca tccccatccg ggtgggcaat gcagcactca 1500
acagcaagct ctgtgatctc ctgctctcca agcatggcat ctatgtgcag gccatcaact 1560
acccaactgt cccccggggt gaagagctcc tgcgcttggm accctccccc caccacagcc 1620
ctcagatgat ggaagatttt gtggagaagc tgctgctggc ttggactgcg gtggggctgc 1680
ccctccagga tgtgtctgtg gctgcctgca atttctgtcg ccgtcctgta cactttgagc 1740
tcatgagtga gtgggaacgt tcctacttcg ggaacatggg gccccagtat gtcaccacct 1800
atgcctgaga agccagctgc ctaggattca caccccacct gcgcttcact tgggtccagg 1860
cctactcctg tcttctgctt tgttgtgtgc ctctagctga attgagccta aaaataaagc 1920
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acaaaccaca gcaaaaaaaa 1940

<210> 27
<211> 864
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (552)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (773)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (856)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (863)
<223> n equals a,t,g, or c

<400> 27
tctaaatcca ttacaaatct gcttagcttc taaatatttc atcaatgagg aaatcccagc 60
cctacaactt cggaacagtg aaatattagt ccagggatcc agtgagagac acagaagtgc 120
tagaagccag tgctcgtgaa ctaaggagaa aaagaacaga caagggaaca gcctggacat 180
ggcatcagag atccacatga caggcccaat gtgcctcatt gagaacacta atgggcgact 240
gatggcgaat ccagaagctc tgaagatcct ttctgccatt acacagccta tggtggtggt 300
ggcaattgtg ggcctctacc gcacaggcaa atcctacctg atgaacaagc tggctggaaa 360
gaaaaagggc ttctctctgg gctccacggt gcagtctcac actaaaggar tctggatgtg 420
gtgtgtgccc caccccaaga agccaggcca catcctagtt ctgctggaca ccgagggtct 480
gggagatgta gagaagggtg acaaccagaa tgactcctgg atcttcgccc tggccgtcct 540
cctgarcagc ancttcrtgt acaatagcat aggaaccatt aaccagcagg ccatggacca 600
actgcactat caatctcggt cctgaacctc acctccaaaa agaaagcgac ttcagtagaa 660
agtggggtca gaaggaagag tgtggtcctg gcccagctag acaaaaagcg ggatgacttt 720
tgtaaacaga atcaggaagc atcatcagat cgttgctcag ctttacttca ggncattttc 780
agtcctctag aagaagaagt gaagggcggg gaattttatt tcgaaaacca aggggggtaa 840
ccgtctctgt tattcnagaa agnt 864

<210> 28
<211> 703
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (549)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (612)
<223> n equals a,t,g, or c

<400> 28
gggtcgaccc acgcgtccgc caggagtagg tcctatcagt gcccccccag agtagagagc 60
aataagagcc cagcccagtg cagtcccggc tgtgttttcc tacctggtga tcagaagtgt 120
ctggtttgct tggctgccca tttgcctctt gagtgggcag ccctgggctt gggcccctcc 180
ctccggccct cagtgttggc tctgcagaag ctctggggtt cccttcaagt gcacgagggg 240
ttaggctgct gtccctgagt cctccattct gtactggggg gctggctagg acctggggct 300
gtggcctctc agggggcagc ctctccatgg caggcatccc tgccttgggc tgccctcccc 360
cagacccctg accacccccct gggtcctgtc ccccaccaga gccccagctc ctgtctgtgg 420
gggagccatc acggtgttcg tgcagtccat agcgcttctc aatgtgtgtc acccggaacc 480
tgggagggga gggaacactg gggtttagga ccacaactca gaggctgctt ggccctcccc 540
tctgaccang cttatcctga gtttggtggc tacttccctc tggcctaagg taggggaggc 600
cttctcagat tntgggggca cattgtgtag cctgacttct gcaggagctc ccaattccag 660
gaaggaaaag agccaaggcc ccacttttgg ggatcagggt ggg 703

<210> 29
<211> 337
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (71)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (331)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (332)
<223> n equals a,t,g, or c

<400> 29
aggtgacact atagaaggta cgcctgcagg taccggatcc ggaattcccg ggtcgaccca 60
cgcgtccgca nttacattta tgtttgtagt tctaagtaag accctgagag attttcaaaa 120
aggaattaat gattattttt gtcttcccca ggattggaac gagttactat gctgtttctg 180
ggattgcata atgttcgtca gacctccatg ttccctcgtg atcccaaacg actcactcct 240
taaattcaca ctttgccact taactccagt gtggatgaca gagcgagacc ctgcctcaaa 300
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa nncccccc 337

<210> 30

<211> 631
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (524)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (608)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (615)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (630)
<223> n equals a,t,g, or c

<400> 30
agggaactca ctgtggtttt ratttgtatt tycttttttta agtgaaagca rgkttattaa 60
gaaagcaaag gaataaagaa tggctattcc ataggcagag cccattgcca ctcagctgct 120
tatacttatt gttacttctt gattgtatgc taaacaaggg gtggattatt catgagtttt 180
atgggaaagg ggtgggcagt atctggaact gagggtttct cccctttgta gaccatacag 240
ggcaacttcc tgacgttgcc atggtatctg gaaactgtca tggtgctggt ggaagtgtct 300
tttagcatgc tgatgcatta taattagagt ataatgaata gtaaggacaa ccagaggtca 360
ctttcatcgc catcttggtt ttggtcagct tctttactgc agcctgtttc atcattaagg 420
tctttattac ctgtatcttg tgccgacctc ctgtctcatc ctgtgactta gaatgcctaa 480
cctcctggga atgtagccca gtgggtctca gccttatttt actncacccc ctaattcaag 540
atgggagttt ctctgggttt cagacaaccc ctggacatgt tttccccctt cccttttttac 600
agcagaancc ttaantccca acagtcgtan a 631

<210> 31
<211> 571
<212> DNA
<213> Homo sapiens

<400> 31
gaattcggca cgagtcccac cagccccccca aaaaacctct cagtagtttc tttcagtgta 60
caaaatgatg agcatttttc tatgatgagg ttttaaccat tattcagggt ggtcttttgt 120
ttttaaatct ttttttaact aataagattt acggtgtgta ttttatacag aaatgcatta 180
taaatgtttt taattgtgtt ctgttttttg cagtctttaa gtgccatgcc aattgttctt 240
atattctata gaagttcgct caaaatactc aacaggggaa taggcagcgg acagtcagaa 300
tggttggaat tttggctttc taagaaaaac tttattttgc ataagcatgt ggtcagatca 360
ttttgtgcat atgcagcctg gattggatgt taagtaaatg cttgttcagt gccggtacat 420
ttacttaaat ctgtttttat ttttgtcatg tagaatacta ctgtggtcat cataatgtaa 480

tctatttctg tacctttttt tttttttttt actttgaagt cttaaataaa atgtataata 540
cccaaaaaaa aaaaaaaaaa aaaaaaaaaa a 571

<210> 32
<211> 424
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (413)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (414)
<223> n equals a,t,g, or c

<400> 32
tttctaaaaa tcaggaaaat tagttactaa aaattgctga tcatttttgt ttcattattt 60
ttgttatttc aaatgtataa gctctgggat tctttttgga gcaataccta caaagtcagg 120
caccagaatg tgcctcagag ctgtgacatt tcaacatgat ggttttggtt tggtttggtt 180
ttgtgtcctt tttatttgca gttttttctg ttgcaacaga aagtggcttg gaagtcttag 240
gtggtatgta acaaattctt tttaaaaatt ttaaagcagt atttaagtat tcttaaatgt 300
gtaaattcat ttaatgtttt acttctaatt tcttgtatct tggctgtctg gttttattgc 360
atttttaaaa aaactgaacc attaagkaat tggaaatgaa tgaaggtgaa atnnctgaac 420
ctga 424

<210> 33
<211> 1626
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (525)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (542)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (562)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (607)

<223> n equals a,t,g, or c

<400> 33
ccacgcgtcc gacgcggcgc acgcggcagt cctgatggcc cggcatgggt taccgctgct 60
gcccctgctg tcgctcctgg tcggcgcgtg gctcaagcta ggaaatggac aggctactag 120
catggtccaa ctgcagggtg ggagattcct gatgggaaca aattctccag acagcagaga 180
tggtgaaggg cctgtgcggg aggcgacagt gaaacccttt gccatcgaca tatttcctgt 240
caccaacaaa gatttcaggg attttgtcag ggagaaaaag tatcggacag aagctgagat 300
gtttggatgg agctttgtct ttgaggactt tgtctctgat gagctgagaa acaaagccac 360
ccagccaatg aagtctgtac tctggtggct tccagtggaa aaggcatttt ggaggcagcc 420
tgcaggtcct ggctctggca tccgagagag actggagcac ccagtgttac acgtgagctg 480
gratgacgcc cgtgcctaat gtgcytkgsg ggggraaacg actgncccac sggagggaag 540
antggggagt ttttccgccc gnaggggggc ttgaarggtc caagtttacc ccatgggggg 600
aactggnttc cagccaaacc gcaccaacct gtggcaggga aagttcccca agggagacaa 660
agctgaggat ggcttccatg gagtctcccc agtgaatgct ttccccgccc agaacaacta 720
cgggctctat gacctcctgg ggaacgtgtg ggagtggaca gcatcaccgt accaggctgc 780
tgagcaggac atgcgcgtcc tccggggggc atcctggatc gacacagctg atggctctgc 840
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ggaaggagaa tgctttcttt gtggcctcat ctgtggtttc gtgtccctct gaaggaaact 1440
agtttccact gtgtaacagg cagacatgta actatttaaa gcacagttca gtcctaaaag 1500
ggtctgggag aaccagatga tgtactaggt gaagcattgc attgtgggaa tcacaaagca 1560
aatagtactc cagaaagacc ctgtctcaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1620
aaaaaa 1626

<210> 34
<211> 450
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (291)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (382)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (404)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (439)
<223> n equals a,t,g, or c

<400> 34
acccacgcgt ccgccggcgc ggtctatggc tgcgacttct ctaatgtctg ctttggctgc 60
ccggctgctg cagcccgcgc acagctgctc ccttcgcctt cgccctttcc acctcgcggc 120
agttcgrgga akctctccct aggtcaggtt ggagtgcagt gctgcaatca cggcttactg 180
cagccttgac ctcctgggct caagtgatcc tcccacctca gcttaaatga agctgttgtc 240
atttctggaa ggaaactggc ccagcagatc aagcaagaag tgcggcaaga ngtagaagat 300
ggggtgggct ccaggcaaca aacggccaca cctgaatgtt gatcccgggt tggcgaaaaa 360
tccctgcaag tcactcctaa tntcctccaa caaaaacaaa gggnaagttg caatttgttg 420
ggaaatccac cagttgaana acaatttttt 450

<210> 35
<211> 960
<212> DNA
<213> Homo sapiens

<400> 35
attttttttt tttttttttt tttttttaaa acaacttctc aaatttattt aactcatgtg 60
gttaacatgg tattgtataa aaagaaaaaa aaaacaccac tcaatactta ctaagccttg 120
cagacagctc agagttgagg cagcatattg ggcatagaga tcataggatt tgtattatcc 180
cttgcaagat ggaactccaa ccaacaccag aattttccaa ttcaaattca gttttagtcg 240
agaccccagc ataattttta gaaaaaagat tggattgttg cttttctttt aattttccat 300
tcctatttag acaaatgacc agaggcaatg acaaaagtaa ctgtttaaaa gggatttctc 360
tccagaagtt ttttctaaag gtttaagtcc aggctttcca tccttctctc catccttttt 420
cattttaaaa agaagggttt tggratwtgt caacctttac tcagcttgct atacaaagcc 480
actgctttag tcctagacat aatgccagga ctcatctccc aaacttctgg tcttaatcaa 540
gttcatgctt ggttgctaaa gaagctcatg ttaatcccaa agtcagcaca atcccaacct 600
taaaaagcag acagcctgat tgcatcactt acgacataca ccatcttgag gcaaaagaag 660
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ctgtccagcc ataatggaag tcacttgaag gttatcattg taatagatga ttttccataa 840
gtaactaata aaaatgtttt ctttgatgtt tagacctact aacaattcag tctctccctc 900
tccatcctct cttagggagc ctgtactttt aagcaaatag ggaagctaaa acctcgtgcc 960

<210> 36
<211> 530
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (78)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (362)
<223> n equals a,t,g, or c

<400> 36
taacaattca atatataatt acacaaataa tttttaaata taatcaatag taaagactgt 60
tctgtggatg gtagtgtnta atacattttc tattttgtac agtgatttta ggccaaacag 120
ctgctgattt taagaaaaca aaaggcctga aacccgtctt cgtgtctcct ccctccctcg 180
ccttcctcct tcctagctcc tctcctccag ggccagactg agcccaggtt gatttcaggc 240
ggacaccaat agactccaca gcagctccag gagcccagac accggcggcc agaagcaagg 300
ctaggagctg ctgcagccat gtcggccctc agcctcctca ttctgggcct gctcacggca 360
knccacctgc cagctgtcag caaggcctgg ggaacttcag ccctggatgc agggccttat 420
cgcggtggcc gtgttcctgg tcctcgttgc aatcgccttt gcagtcaacc acttctggtg 480
ccaggaggag ccggagmtgg gagtcctggt ggggaacaga ttggaaggta 530

<210> 37
<211> 538
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (41)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (502)
<223> n equals a,t,g, or c

<400> 37
gccgcggcca cggggcgcag gggccatggt gcgcggcagg ntcttccggc tctcggtccg 60
ggacgtgcgc ttccccacgt cgcttggggg ccacggcgcg gacgccatgc acacggaccc 120
tgactactca gctgcctatg tcgtcataga aactgatgca gaagatggaa tcaaggggtg 180
tggaattacc ttcactctgg graaaggcac trwagttgtt gtctgtsctg tgaatgccct 240
cgcccaccat gtgctcaaca aggacctcaa ggacattgtt ggtgacttca gaggcttcta 300
taggcagctc acaagtgatg ggcagctcag atggattggt ccagaaaagg gcgtggtgca 360
cctggcgaca sggccgtcct aaacgcggtg tgggacttgt gggccaagca ggagggaaag 420
cctgtctgga attacttgtg gacatggatc ccaggacgct ggtatcctgc atagatttca 480
ggtacatcac tgatgtcctg antgaggagg atgccctaga aatactgcag aaagtcaa 538

<210> 38
<211> 1256
<212> DNA
<213> Homo sapiens

<400> 38
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ggtgcagaat tagtattgct tccttctttc tgtgtgtgat aatggtgggg gaaggctagt 180
accatctctg tcatacatca aattcccata tgtgaataaa tttatgtatt tttactgcac 240
tctttttata ggtttatcat tcctgcacca acaacgaatg ccattattaa aactttatag 300

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aaagtctcaa tatatggcac agtgcttcat ttcttttttt catctagagt gccttagcca 360
ttcttggctt tctgccgttc cacaaatagc aatgtaaatt tgtcagtata atagagaatc 420
cacttatatt tcttcaacag ctattgggaa tatggttggg attacttcaa ctctatgtat 480
caatttgagg agaattgata tctttataag attaatccaa atcacagcat gtcaaaattt 540
ccttattagg gtagttttaa tgtccttcaa aaacactgta ttttcttcat atagatctaa 600
gaaaactttg gtgtttattc ctaagaaatt tatagttctt gttttgtaaa tgatatctat 660
tcttaagtta cacttaaact tatttgttgc tgtatataga aatggaattg acttctatgt 720
acagcagttg caaactgata ttcatatgca gaaagtgaaa ctagacccct aatggataaa 780
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agcaaaaatg gacaaatagg attatatcaa actaaaaaga ttcagcacag taaaataaat 960
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gattaatatt tagaacatac aaggacctca aacaactgag caacaacaac aaaaatatcc 1080
aattttaaaa atgggcgaaa gagccaaata aacatctctg aaaaccagac gcaagtggcc 1140
aacaggtata tgaaaaaaaa aaatgctgaa caccgctaat catcagggaa atgcaaacca 1200
ataccacaat gagatattat ctcattwtgg ctattatcaa aaaaaaaaaa aaaaaa     1256
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<210> 39
<211> 666
<212> DNA
<213> Homo sapiens

<400> 39

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gggggagggg ggcctcgacg gtttcccatc cccctctggc aaccctaatc ttccttctcc 120
atctgggccc tggggcgtct tccaccaccc aggccggatg ctttaaaaaa aattgctttt 180
taaagtgtct gtcgttgaaa gaaattagtc ttacccttga agtcargggc gcgtcctcgc 240
aatacacatc ttgttaggga aagtgttcgg ctccagctak ggttctacaa ggcgtttctt 300
gttcaccgcc ggagggaagc aggctccgga gtgactgcct tctgaaagtc ggtcttgtaa 360
caattggatg ratgcctttg aagagcccct gtccctattc tatgcttgaa aacagcgtgc 420
agtcctaatg ttcaagaacc acgaccacat aaaaacattg ctccccttct gctgctttga 480
aaacgacccc taaattccgt gtagaagttg ccaggtcgtc ttgacgtaca cttcgtttgt 540
atgatgtttg tctgtcaaat actgtgatgg aagagtgtat gcgggggagg agcagggaat 600
ttttaaaarc attttccggk cacctcagac tgggagatca tgttctttcc tgaaaaaaaa 660
aaaaaa                                                            666
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<210> 40
<211> 1016
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<400> 40

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caagaggacc ctgcttgggg accccaagtt tgtggatgtg actgaggtgg tccgcaacat 180
gacctccgag ttcttcgctg cccagctccg ggcccagatc tctgacgaca ccactcaccc 240
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gatctcctac tacaagcccg agttctacac gccggatgac gggggcactg ytcacctgtc 300
tgtcgtcgca raggacggca gtgctgtgtc cgccaccagc accatcaacc tctactttgg 360
ctccaaggtc cgctccccgg tcagcgggat cctgttcaat aatgaaatgg acgacttcag 420
ctctcccagc atcaccaacg agtttggggt accccctcac ctgccaattt catccagcca 480
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cggatggtgg tgggagctgc tgggggcaca cagatcacca cggccactgc actggccatc 600
atctacaacc tctggttcgg ctatgacgtg aagcgggccg tggaggagcc ccggctgcac 660
aaccagcttc tgcccaacgt cacgacagtg gagagaaaca ttgaccaggc agtgactgca 720
gccctggaga cccggcacca tcacacccag atcgcgtcca ccttcatcgc tgtggtgcaa 780
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caccaggacc aggaagggga ctctggggga ccggcttccc ctgtraagca gcagagcagc 960
acaataaatg aggccactgt gccaggctcc aggtgcctcc ctggcytgtc tcccca 1016

<210> 41
<211> 423
<212> DNA
<213> Homo sapiens

<400> 41
agtgagctgt gattgcaaca ctgcacttca gcgtgggcaa cagagtgaga tcttgtctca 60
aaaaaaagaa ataatactag tttttgtttk tagattttgt atcctgaaac tttactgaat 120
gtttttagt tcgaacagtt tttttggtgg agtctttagg atttctcta cttatgatcg 180
tgtcatctgt aaacagagac agttaacttc ctcctttccr atttagatgc cttttctttc 240
tcttgcctaa ttgcctaatt acagcatgtt cctattctgt aaatgttcaa tgaactagar 300
aatgattctt gggtagttaa tattgtcaat gttgatgaac tcttttcctt cgctgaaagc 360
agctactttg ttggaggttt caattctgcg tggcaatttg cagcatttct agtggtactg 420
ctc 423

<210> 42
<211> 961
<212> DNA
<213> Homo sapiens

<400> 42
gcctctacca cctcagttac agacaccacc aaggtcaaac agtgtatttg ctgtcaacca 60
agctgtgtca ccaaactttt cacaaggatc tgccataata attgcctctc cagtccagcc 120
tgtactccaa ggaatggtag ggatgatccc agtatctgtg gttggacaga atggaaataa 180
cttttctact cctcctcggc aggttcttca tatgcctttg acagcacctg tatgcaatag 240
aagtatccct caattccccg tccctccaaa atctcagaag gctcagggac taagaaacaa 300
gccttgtata ggaraacaag taaataattt ggtggattcg tcaggtcatt cagttggatg 360
tcatgcacaa aaaactgaag tttctgacaa aagtattgcc acagatcttg ggaaaaaatc 420
agaagaaacc acagttccct tcccagaaga gagtatagtt ccagctgcta aaccatgcca 480
cagacgtgta ctctgtttcg acagcactac tgctcctgtg gcaaatacgc aggggccaaa 540
ccataagrtg gtgtcccaaa acaaagaaag gaatgcagtc tcttttccta atcttgactc 600
acccaatgtg tcctccacct taaaaccccc ttctaataat gctatcaaaa gagagaaaga 660
gaagcctcct ctgcctaaga ttttatctaa atcggaaagt gccattagcc ggcataccac 720
cataagagaa actcaatcag aaaagaaagt ttcaccaaca gaaattgtgc ttgaatcttt 780
ccataaagca acagctaata aggagaatga attatgcagc gatgtaggaa agacagaaaa 840
atccagaaaa ttcaaaacta tctattgggc agcaaaatgg gggtttgcga agtgagaaat 900
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t 961

<210> 43
<211> 545
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (34)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (142)
<223> n equals a,t,g, or c

<400> 43
ccaccgcggt gncgaccgct ctagaactag tggntccccc gggctgcagg aattcggcac 60
gagttggagt cctttgctgt tcccaatttg tggaagagtg aagacatcac ccaaatcgtg 120
gccaactatg ggctcatatg tnttactcgg gctggaaatg atgctcagaa gtttatctat 180
gaatcggatg tgctgtggaa acaccggagc aacattcacg tggtgaatga atggwtcgct 240
aatgacatct catccacaaa aatccggaga gccctcagaa ggggccagag cattcgctac 300
ttggtaccag atcttgtcca agaatacatt gaaaagcata atttgtacag ctctgagagt 360
gaagacagga atgctggggt catcctggcc cctttgcaga gaaacactgc agaagctaag 420
acataggaat tctacagcat gatatttcag acttcccatt tggggatctg aaacaatctg 480
ggagttaata actggggaaa gaagttgtga tctgttgcct aaactaaagc ttaaaagttt 540
agtaa 545

<210> 44
<211> 377
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (301)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (347)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (359)
<223> n equals a,t,g, or c

<400> 44
cgatcacccc cgaaccattt catcacgtat tcttcagtgg ctggacgagg agctgcccga 60
cctgtccgtg tctcgcagaa gtagccactt gcactggggc attccggtgc ccggggatga 120
ttcgcagacc atctatgtat ggctggatgc cctggtcaac tacctcactg taattggcta 180
cccaaatgct gagttcaaat cttggtggcc ggccactctc atatcatagg taaggacatt 240
ctcaaattcc atgccatcta ttggcctgcc ttcctgttar gggccggcat gagcccgcca 300
nagcgcatct gtgttccatt cccaatggaa cagtctgtgg gccaaanatg tccaagagnt 360
tgggcaagtg gtggatc 377

<210> 45
<211> 440
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (387)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (416)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (436)
<223> n equals a,t,g, or c

<400> 45
ttggacatcg tggccaactc tatcaagacc acaaatacca cttacaatta attttaaatt 60
attcatctgt acatagtttt ctaaaatgta tataattcaa acagagcatc ttgtaactga 120
agacacacca tatctatgat atcgcattag tccatgtggg gaaaagaaag atcagattgt 180
tactgtgtct gtgtagaaaa ggaagacata agaaactcca ttttgatctg tactaagaaa 240
aattgtttct gctttgagat gttgttagcc tataacttta gccccaactc tgtgctcaca 300
gaaacatgcg ctgtaatgga tcaaagttta atggatttag ggctgtgcag gatgtgcctt 360
gttaacaata tgtttggcag gcggtangcc ttgggtagaa gtcatcggcc attccnccat 420
tccccggttt aacccngggg 440

<210> 46
<211> 525
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (345)
<223> n equals a,t,g, or c

<400> 46
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ggattttscg gggttcgtcg ggcctgtgga agaagcgccg cgcaacggac ttcggcagag 120
gtagagcagg tctctctgca gccatgtcgg ccaaggcaat ttcagagcag acgggcaaag 180
aactccttta caagttcatc tgtaccacct cagccatcca gaatcggttc aagtatgctc 240
gggtcactcc tgacacagac tgggcccgct tgctgcagga ccacccctgg ctgctcagcc 300
araacttggt agtcaagcca gaccagcttg atcaaacgtc gtggnaaaac ttggtcttcg 360
ttggggttca acctcactct ggatggggtc aagtcctggg ttgaagccac ggttggggac 420
aggaagccac agttggcaag gccacaggct tcctcaagaa ctttctgaty gagccyttcg 480
tcccccacag tcaggytkag gagttctatg tctgcatcta tgcca 525

<210> 47
<211> 414
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (403)
<223> n equals a,t,g, or c

<400> 47
ttagaaagar agggggctgg gggccgagac ttctgggtcc ctgtatgttg cagagggttg 60
catgtcatct ccatggagaa ggctgtgtac gctgtcacgc aatcccttgt aagaggccag 120
gcccctgggg gaggagggag cagctgtggc tcacacagcc ccaggaaacc acctcttcct 180
tcagtgagtc agatagatag agaatcccgt gacagtgaca ggcaagtgac tagccagata 240
gaaagcattt ttgtgtaata actaattttt gtttgcttct ctctctctct tccccgccct 300
ccccatccgg attcccgtgg ctgtgtgcat ctcctgsctg tgtccccatg tctgcccgca 360
gtgcgcttct ccgagaaggt cactgtccat tcctgggtgt ctnggcaagg ccgg 414

<210> 48
<211> 323
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (274)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (321)
<223> n equals a,t,g, or c

<400> 48
tcgggtccgg nattcgccgg tgccggggac agaaacctcc tgccttctta gttcataacc 60
ccccccttaca ttagattcta accctgtggt gattttaggt tgggatttgg gcgcctgcag 120
atggctccga agccagcctc ttgtgatccg agccacttct ctggcactcg gagcgctggc 180
acccgcggag cccttggttc accggaccgc ctgggaacct ggccggggtc tctggcagcc 240
tcccagggct gaggttcaga ctctgttccg cctnacccag gtccacacct ggatagggct 300
gggagttgag gcttggtttt naa 323

<210> 49
<211> 841
<212> DNA
<213> Homo sapiens

<400> 49
tcgacccacg cgtccgsaga tttcagcctc acatactaag taaatactga taaataagga 60
aattagaaat ttagtattca taattaaata tgctctaaaa tttcckrtac ttttatttcc 120
tgtttattct taggtagatt ggaaggggga aacagtctgt tctccctaat taaatttttt 180
ctaataacga ttagtagaat atggacattc tatatgacag tgacattaaa agaggctctt 240
tggaagtata tacattatta acataatgtg tacaagtcct tttgaaatga caactttaat 300
gggtttcagc tcttttatct agagcttgag ataattcaag ctgagttttt cagggcatat 360
cacaacggca aagtgttcag cagtgggata tcaatgctta tttacatttt cctactgcta 420
tttatataaa atgttattcc attcagagga tgccttttat ccccacatta aagcacagat 480
cattaagcaa taaaaaccaa attgtctgtc attcaaatta taactgcagt tatttttgca 540
tggtaagagt gaggtgctaa ttttgtgtga gatgaacttt gtaaactact ttgggaaatg 600
ttctttggaa gtaaggtttt ttctccttta gtcttatgct tccacttttg tctcagattc 660
acaatccatt aaaamawggg gaaaaaagaa aargtaaaat tgagagactt ttgttagagg 720
agctatttgg aatgaaccaa cattycasat ttcccaaaat gtaagttagg aagtctccat 780
kgycyckgcc attaccaaaa tacactgkta ctatcttaat ctcaagagtg tcattacagt 840
g 841

<210> 50
<211> 534
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (423)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (430)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (524)
<223> n equals a,t,g, or c

<400> 50

aggaaattta gaaaatgatg aattcttgtc catttttgta atcaagattt taggaaaaac 60
agaagtacat ctatctttat gaaattttgg gcaggttttt gtgtatcaat attttgtact 120
tttagggaat attttatttt ttagttattt gtgtcaaatt ataattataa aaggtacagc 180
agaaaatata ccatgttttt atataggttc acacctgtac ttaggaggga ccctgtccat 240
ctatatactt tttgtataaa attttaaaat gttaaagatc cacaaggtct taataaaatg 300
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aaggaaccta gaaagactgg taactaatgc ctggaaatgt tctatattga atgtaccatg 420
ccnctggttn gggaaaaatg tactaataat gggaatggga aataaaccca gaaatccgaa 480
gttaattcca gcctaaaaaa aaaaaaaaaa aaaagggggg gccnccccta gggg 534

<210> 51
<211> 317
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (222)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (250)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (265)
<223> n equals a,t,g, or c

<400> 51
ggcacaggaa aaagcacttt cttaagccta cagtatcaga tcaatgggga aaacaacaga 60
aaactaagag gagaattttc ccgttaattt tcttgcagaa aagtataagt ctaattgccc 120
attgccataa attttgtctt gtactcagag aagcaacatg cactggctca ttttatgtgc 180
aaagaaaaga tttcaccatt aaaaaaatta acttggctag gnatggtgtc tcacactggt 240
gaatcccagn cactttgggt ggctnaaggc agatagactg cttgaaaccc aggaattcaa 300
gaccagcctg ggacaac 317

<210> 52
<211> 1789
<212> DNA
<213> Homo sapiens

<400> 52
ggcacgagga aacggacaac aatgttgttg ccaaaactgg atcaggctac cataatcttt 60
tttcttacat tccacttttc tatcttttcc aaatattcca cagtgatcat gtattaattt 120
ttctcttatt ttgatgttgc aaatatttat tttattatgg aaaacggcaa gctacatatg 180
gggaaaaaga aaaattgaaa ttatgcaatg gcctaccact caagagataa ttattaagat 240
tgtggtgtac ttttttctat atactttttt ttaaaggaaa ggatcttact ctgtcgacca 300
gcccctcacc tcctttgact agctgggatg acagcacatg ccaccatatc caagtatttt 360
tgtatttttt gtagagaagg ggtttcatta tgttcaaact cctcagctgg cctgcttgat 420

ccgatgcttg ttagccttga catttacaat gaacacaagt gtgttgccat cttctgtctt 480
cttcacagac aacttagtag tcaggggaac ttgatgatgg ccaagtggtc aagctcctca 540
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aagtgagtga catgtagggt gtgtgtgtgt gtgtgtgtgt gtgtgtatgt gtgtgtgtgt 660
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cagaatgagg gaaagtcatt ctggccattc tcttttgcag agaaggtcat tctcttttct 1080
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gactggataa tttataaaca gcaggagttt atttctcaca gtttcagagg ctgggaagtc 1320
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cgccagacct ttcataaggt cactagtccc actcatggag gctctacccc catgacttga 1500
ttttttccta aaggccccac ctcttgacac tgttgcattg aagattaaat ttcaacatga 1560
atttggagg gaatgcaaac attcaaacaa cagcactccc tcatctatag atttctacaa 1620
ctttcagatt attgcagcaa gtggttccat ctgtaaatca cttggctagc ttatgtgtgt 1680
tgtctctctt ccataacaca tcaacccaag atttccaaca aaagaataat aacttaaaac 1740
aacaacaaaa aaactcactc acacaaagta tgtgtataag caggttgta 1789

<210> 53
<211> 654
<212> DNA
<213> Homo sapiens

<400> 53
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aratggatgt tggcaaaata ggaggatacc ctcatttgct gaatgggggga cctgctctga 120
gcctgcccag kggccaggcc tgctccaggt taaactggac ggaaggccca ggtctcagtt 180
tctttcaacc aggagaggcc gctgcctaga gcccctcccc accttttcct ggatgggtga 240
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cctgcgagtt ggcaggactc tgaggtttcc tgcagaccat gccatgagat tgaaggtgcg 480
gggaaataaa gaaaaatcac catttaggag actccattct ttccctacaa cccagctgtg 540
gtcccagaga tcaggggtg ttgccaggtg tggctgggga agggtctggg ttcacaaact 600
caccggcact ctttagtccc cgtataacat ggtggttaag gataaagatc ttga 654

<210> 54
<211> 334
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (154)
<223> n equals a,t,g, or c

<400> 54
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actaacctgc cgcccacgcg cctcctgacc acagcacccc gtcggctttc taattctgtg 120
agctgccctc gtgggcgtgg cctccctgtg gagntcccca tgtgcctccc cttggtccag 180
cctgcagcta ggaagtgggt cacagcgacg gggctgggct gggccaggcc aggctccggg 240
agatgtggaa ttggcgaaac aactgcccca gtagtatcct ccgcctaggr ctccaagagg 300
tgggaattgg ggcactacgg ccgggtaagg cagt 334

<210> 55
<211> 474
<212> DNA
<213> Homo sapiens

<400> 55
tgcaaacatg atggatgggg aaagcatagt aactgtactc accaacaaga tgctggagtg 60
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ggaagaatag agatcaaatt ccaaggacgg tggggaacag tgtgtgatga taacttcaac 180
atagatcatg catctgtcat ttgtagacaa cttgaatgtg gaagtgctgt cagtttctct 240
ggttcatcta attttggara argctctgga ccaatctggt ttgatgatct tatatgcaac 300
ggaaatgagt cagctctctg gaactgcaaa catcaaggat ggggaaagca taactgtgat 360
catgctgarg atgctggakt gatttgctca aagggascag atctgacctg aractggtaa 420
tggagtcact gaatgttcag gaagattaga agtgagattc caaggagaat gggg 474

<210> 56
<211> 367
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (250)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (252)
<223> n equals a,t,g, or c

<400> 56
ccggcctcaa gcaatcctcc cactggcctc acaatgttgg gattacaggt ataagccact 60
gcacacggcc ttactatgct atcaattcca tatatggaaa ggtgttttcc ctttcagagc 120
tctttaaagc tctgcagaag atttacatgt gtttatagag ctaagagaaa tcagggcatg 180
gaaattgagt gtgtaataaa aattaaactc ttcatgttat ataatcatgc ataacttcta 240
tcttcattcn cnggaagttg cctagagcac catcacagct aggaagcttc catcatggat 300
taccttattt cccaaagcaa gtactccaat aattgtctca agagaggaag gacaactggt 360
taccagc 367

<210> 57
<211> 564
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (542)
<223> n equals a,t,g, or c

<400> 57
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acatggaaca gagtgggact tctaattgta tgacttcaag attttgcttt gtttaaatta 120
ataactgttt tcagaattaa gtgcttaaaa acaaatttga ttgaaaagtt caagacaaga 180
attttgctct ctatggctgt tccatataaa tttgatggtt gattctgaat gtaaatgact 240
gaagaattaa aaaataagaa attccttttt aaaaggcatg cctcttgcac tgtgaacaag 300
acagtagtcc cttaaaccat gaatatgtca gtgttctatg gattacgaaa ttagtaatgt 360
tgcttagccc aaacgtgttt tttaaaaagt atagttttgt acatctcyaa gttatcaaac 420
ttcaaaattg agaacaaatt taaaagtcca tatatgcaac tctagtaagc acttaatagg 480
ttacatagca ctggttaaga acaattaatt ttgtttctat attattacta attattatta 540
cnaatcaaaa aacactgtga taag 564

<210> 58
<211> 444
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (358)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (382)
<223> n equals a,t,g, or c

<400> 58
ggcacgaggg aaaaccataa ctgcctctta atttaacata gaataataca tagttctgta 60
ttttttttaa agtgagctta atgggtaagt atttttata tgctttagct atagctaaag 120
aaaactgata cttaacaaag ttgaatagta ttattcactg gtgctcctaa aatattgttt 180
ttcagtgtaa aatatgcata tcttctatat ttaatatgaa agtcttgaaa tgtatcagac 240
agaagggkat ttcagtttgc aaataatgag caatgtagca attttaacac atttcataaa 300
tatatatttt gtcattggtg gagagcacca tttgttgttt tgaatatact ttaaaggnaa 360
gaggtacaag ggacataaat gntgagatta cctacaggat ggaaatagca gtacagttcc 420
attggtagat attttgaaat gttt 444

<210> 59
<211> 347
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (327)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (328)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (340)
<223> n equals a,t,g, or c

<400> 59
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catcacagtg atttgtcatg aaaagccata tatgggggac atgctaaaat ggcttctgaa 120
tgaaatacga cagcagagaa agatgccact gaaatgctga aattatcttt gctgagcagc 180
ttttgaatgc taagggttcc agtatgtgac ccaaagaagg agttgtctca actccttggt 240
acagggttca ttcaaacccc caagctgtga gagtgtgttt atttttaatt ttttaaaagg 300
tatttaattt ccaaccacac ttcttanntt tttggaaaan gacaatt 347

<210> 60
<211> 322
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (245)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (321)
<223> n equals a,t,g, or c

<400> 60
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agaaaactga gtctgatgtt tgatttgtgt aaagacttct ttaacttttc taactcaatt 120
tttactaagt tataggacta ctcagatttt gtttcttttt tgctcaattt tggtcaattt 180
tgtttttgtc tatgtcacct aagtttycaa atgtattggc atgaatattt ycataatatt 240
ccctnattat cttttacatt tctggggtat cttagcggtg tttccctttt tatccctaaa 300
atgtttatcc atgctttctt nt 322

<210> 61
<211> 834
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (793)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (810)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (814)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (834)
<223> n equals a,t,g, or c

<400> 61
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accaagtatc ttgaaatgat atacagtatg tgcaaaaagg ttcttacagg agttgcagga 120
gaagatgcag agtgtcatgc agcaaaattg ttagaggtca tcattctgca gtgcaaaggg 180
cgtggcattg accagtgcat tcccttattc gtggaagcag ccttagaaag actgacaaga 240
gaggttaaga caagtgaact tcgaactatg tgtctgcaag ttgcaattgc agctttgtat 300
tataatccac acctactact cmatacctta gaaaatcttc gcttccctaa taatgttgaa 360
ccagttacma atcattttat tacacagtgg cttaatgatg ttggactgtt tcttggggct 420
tcatgacaga aagatgtgtg ttctcggact ctgtgctctt attgatatgg aacagatacc 480
ccaagtttta aatcaggttt cyggacagat tttgccggcy tttatccttt tatttaacgg 540
attgaaaaga gcatatgcct gccatgcaga acatgagaat gacagtgatg atgatgatga 600
agctgaagat gatgatgaaa ccgaggaact ggggagtgat gaaagatgat attgatgaaa 660
gatgggcaag aatatttgga gattctggct aagcaggctg gttgaaagat gggagattga 720
tgaaagattg ggaagaaaga tgatgctgaa agaaactgct ctggaaaggc tattcccaca 780
atcattgatg atnaaaaaat aaccctgttn gatnaatttc caaatatttt aaan 834

<210> 62
<211> 1796
<212> DNA
<213> Homo sapiens

<400> 62
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tactggaaac ttgcattatt tacagccatt aggagctccc tggcttccat tccactcatg 120
actagcttta cctctttgac cccactgtat tattgtctag cccagttcag ctgaatcttt 180
caacacaaaa tatacaggga acccсttcct ggggaacttc ctttgttatt gaggtcttcg 240
ctgatggctt cttccatttg atactcagtc tcagtcacag taggattacg gaatcttttg 300
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agttaattca agtcttcatg taaaacttct tctatcatag tggacattaa aaaaaatctc 420
tctgcaaagt gcattgaccc tacctctagt agatgaatgt tgaacaagta gcctatctag 480
gaagcaagtg actagcatcc atgggcatcc cacaggttgt agtccagccc cgatcttggt 540
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ttgctgaatg aatgaataca tatatgaatt caaagcaatg aaaaaatcac cccaggaaaa 1740
gatgtaaaca tttgacatag gacaagtcac caaaaaaaaa aaaaaaaaaa ctcgta 1796

<210> 63
<211> 1376
<212> DNA
<213> Homo sapiens

<400> 63
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atgtcagtgc agatttgcat tgaatcatgc cattatgttt tttctcattt ttatgctgtt 180
gggtcttagt ttttaaattg atataaagaa ctcagcaatg gttttatttt ctactcatac 240
ttagggttta ggaaacacta ccactagtta tcatttaatc aacttcaatg gtctactgaa 300
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acacttcctc acaattgtac ttcccaatca aatcatgtga tcatacagtt attcccatga 420
aaggcagaat gtttgtttca aaattaatct agttttctgt acatttaaat ttgagaaggt 480
gacaactggc tcttttccag tcttccttca tgtcagtttt ctgatagacc actattggca 540
aacagtatct gtcaactacc aaatgtgtaa aattttctgt atttcacttt gtcttatttg 600
taaatagtga actaaaactt ttggcagatc agcaacattt gctgagcctg ttttttaagc 660
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tgaatcaaat aaagtgctct aaagaaatta ttctccaaat aaatttttaa aaaaaa 1376

<210> 64

<211> 574
<212> DNA
<213> Homo sapiens

<400> 64
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atcctctttt tttggtccct tctatttttc agtctccggc agcctcttgg tcatgaaagc 120
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caggggccgg aggaagaagc agctgaagct ctgctgaccg agaccgtgcg cagccagacc 480
cacagcctcc cggcgccgga gagcccggag cccgcgtccg cctcgccctc agactccgga 540
gaatgggccc gaggcgagcg atccctccga ggag 574

<210> 65
<211> 603
<212> DNA
<213> Homo sapiens

<400> 65
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tgagagccga ataaggtttg cctgaaataa ctgacactat ataatttctg ctttggcaaa 120
tactaagttc taacttgtca ttcctggtag aacaagcttt atttttcgag cctagcaatg 180
atctagaagc agatgttatc tcagtgcctt ttgcaatttg ttgtgtgggt tttttttttt 240
ttaaagccac acaataattt tggaaaacaa tgtatgggta gaacatgtgt ctgttaattg 300
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gaagctagaa ccaagcagaa tctgtttttt tctgaggagt atcggtagca taaatgtgat 420
tataaacata gtacacttga tatatggagg cagtgacagc tatttttaca aaatttaaat 480
ctgcaaatgg attcaacatg tttatgggtt attaaaattg tctgatttct taggttcttt 540
atagtacacg tgttgaaaat aaatgattaa gaattgtttc aagaaaaaaa aaaaaaaaaa 600
aaa 603

<210> 66
<211> 1772
<212> DNA
<213> Homo sapiens

<400> 66
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ccccagcgat ggcgaccctg tggggaggcc ttcttcggct tggctccttg ctcagcctgt 180
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ttttgaaaca tcaaaaaaaa aaaaaaaaaa aa 1772

<210> 67
<211> 1829
<212> DNA
<213> Homo sapiens

<400> 67
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<210> 68
<211> 1688
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (912)
<223> n equals a,t,g, or c

<400> 68
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tcgttttgtt tgtttttgtt tcactgttca tcacagcagt gttatctcca ggagacatat 1500
agagagctca accggcaatc tcaggtgcat ttaacatttt taaaacgaaa cagtagttga 1560
ccaaattttt cttcttaaaa aattggaagt gggggggaatc caatgacaaa aactaatgtg 1620
gcttgtttct ggagaaaata attactgtaa atggaacaac aacaacaata aaacacacgt 1680
taaacatc 1688

<210> 69
<211> 565
<212> DNA

<213> Homo sapiens

<400> 69
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acacaaaaca ggctcaggac ttagcaagaa gttatggaat tccttttatt gaaacatcag 180
caaagacaag acagggtgtt gatgatgcct tctatacatt agttcgagaa attcgaaaac 240
ataaagaaaa gatgagcaaa gayggtaaaa agaagaaaaa gaagtcaaag acaaagtgtg 300
taattatgta aatacaattt gtactttttt cttaaggcat actagtacaa gtggtaattt 360
ttgtacatta cactaaatta ttagcatttg ttttagcatt acctaatttt tttcctgctc 420
catgcagact gttagctttt accttaaatg cttattttaa aatgacagtg gaagtttttt 480
tttcctctaa gtgccagtat tcccagagtt ttggtttttg aactagcaat gcctgtggaa 540
aaagaaactg gaatacctaa gattt 565

<210> 70
<211> 675
<212> DNA
<213> Homo sapiens

<400> 70
ccagcatcag aagttctgat ggatgatgac cttcagaaaa gtgtggatat gatcatggat 60
atgttttgtc ctccaggaat aaaaattgat gcatatccgt ggttggaatg cttcatcaag 120
tcatacaatg tcacaaatgg aacagataat caaatttgct atcagatttt tgacaccaca 180
gttgcagaag atgtaatcta atattgccat ccaatttagc atacataaaa tgttgccact 240
caccttccct gtttgagctt cttttcctga cctgagtttt gtatcagcaa tgttgatgat 300
gttagcatgg gtatgggatt agaaaatgtc cttaccttaa atctcttggc ttttactggg 360
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gacctgctta aacaagtact gctgagataa gtgtctgatc aagctacagt gtactttaag 480
tagaaatggc aaagttgctt tgttggggtg ctgatactga tgattttagg ataaattcat 540
ttctttaaac ttgtaataca tggttttatt gcttgtttct cyccaggata gtagagattt 600
ctctatttca cctcaamcta ataaaagtgg tcagatttat aatgttaaaa aaaaaaaaaa 660
aaaaaaaaaa aaaaa 675

<210> 71
<211> 270
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (247)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (260)
<223> n equals a,t,g, or c

<400> 71
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accttcccac cggaaagcgg tgcctcggga cagctcagca ccctggtctc cgtggggcag 120

ctcgaggctc ccctagagcc cagccaagac ctctagctca gccgaagagg gtggtcagct 180
gtcggaactt ctgaccagtg ctgttgccca gccctccaga ggtgaggcca ctgagagaca 240
ggctttnggc accacttctn gggctggccg 270

<210> 72
<211> 538
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (101)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (302)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (449)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (459)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (521)
<223> n equals a,t,g, or c

<400> 72
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gtatcatttt ttaaaaatgt agaacctggt ttgatgactc taattaaatt gtctgccaat 180
tactgaagag ctactacata ctagwttctg ggctttagtt ctaaagccca cagcaacctc 240
atgaataaat attattagcc ccactgtata gatgagataa cagactagga gggagaagtt 300
anggaaactt gcttaatgcc tcctgtttag aaaatagctg aactggaatt cagccctgtc 360
ttccatttca ccctgcctgt gtctcacgca cagaacaccc ggggatccgc tggttcccaa 420
agcactgatg agaaccctaa tttgtcaana ttcctgggnt ccagtaaatg gtggtccaga 480
atggtgggtg atctgatttc atattatctg ccaggtgaaa ngtttctgcc tggcaaaa 538

<210> 73
<211> 1071
<212> DNA
<213> Homo sapiens

<220>

<221> misc feature
<222> (1010)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1048)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1062)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1066)
<223> n equals a,t,g, or c

<400> 73
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ggctcgctct gtcgccggcg cgggattggg gcgcgagggc catgggcgcg ctctcctaag 120
gcggaggtcg cgggcgggag gggaggaggc ccgagagagg ctgctgcgaa ggccgcgggc 180
ccgtgactgg gcgcgaggcg gccggcggcg gcggcggcac cagcaccacc atgtcgcgct 240
cagtgctgca gcccagtcag cagaagctgg cggagaagct caccatcctc aacgaccggg 300
gcgtcggcat gctcacccgc ctctacaaca tcaagaaggc atgtggagac cccaaggcaa 360
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tccctgctgt agaaacccgc aacaacaatc aacagcttgc acaactacag aaagaaaaat 480
cagagattct gaaaaatctg gcattatatt acttcacatt tgtagatgtt atggaattta 540
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<210> 74
<211> 640
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (93)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (96)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (619)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (624)
<223> n equals a,t,g, or c

<400> 74
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tcataaatga ataaataaat aaataaataa tangtnacga tccattgtgg cttcctggaa 120
acatccatgt tcacagctgg ggtctggtca gtctgcatag tggagcacac tgctaggatg 180
catccttagc aagtgaaaaa agtgaggctc agaactgttt gtagagtata gccttttatc 240
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tggggttccc tgtggagtag ggaaggggca gtgttataag ttggatttct ggccatatct 360
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tttatgtaat ataagtttwc catgacmtgg gagcctttat aaggaatgac cccaaggaaw 540
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<210> 75
<211> 507
<212> DNA
<213> Homo sapiens

<400> 75
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ttttccgttt ccacatagac aatcacataa tctgtaaata atgactctta cttttccact 120
ttagtcgtta ggttataccт atatatatat wwwmwtgctt tactggacta atttcaacct 180
ccagcacacc accaatgaat agcagtaata ccagcataat tgtctgcagt tctgctgaga 240
tacgtgctct attttattgg cttggctgta ggtttttatt ttattttttg aagaggctaa 300
tctcttacag gaaaggtttc tttttatatc cagtttttac atgatgaatg atttcccagt 360
atttcataat tcatgaggct gaattcctct tgaatttatt aaatgcttcc tgtgcatcct 420
ctgtgatgat catgtttatt tactgctaga actcaagtac ctagaactgt tcctggccaa 480
tgatggtatg taataaatac ttcaatg 507

<210> 76
<211> 1390
<212> DNA
<213> Homo sapiens

<400> 76
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cgctctaagt cctacttgaa caaacacatc cagaaggtgc atgtccgggc tctcgggggc 120
cccctggggg acctgggccc tgcccttggc tcacctttct ctcctcagca gaacatgtct 180

ctcctcgagt cctttgggtt tcagattgtt cagtcggcat ttgcgtcatc tttagtagat 240
cctgaggttg accagcagcc catggggcct gaagggaaat gaggcagctg ctgtgtcccc 300
acggaaacaa ccatctgggg actgctggga aatgctgtga atgcggaggg aagtgatgtt 360
tgggttctgt agctgagaga tttttattca tttttaactg ccccccaacc ccactccaac 420
tccttctcca ccacccattc tcccaatggt ctttagaaat agattttcat ctgatattct 480
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aaaaaaaaaa 1390

<210> 77
<211> 782
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (29)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (34)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (738)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (748)
<223> n equals a,t,g, or c

<400> 77
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agacctaagg gcacaaatgc agaattcatg accttgtagt tgtggcaggg tctaggaagt 120
cctctctccc caagtagaaa atattctctt gccattcctg aaattccaca ttcatataat 180

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ggctgtgcaa tacatgcttc tcaataagaa aattaactgc atgtttactg tgtgctgatc 240
acatcagatt tttatgttta aaaaaatctc attatggatt gagtccagcc cagctctaag 300
agaaaaagaa ggcccatatg ggagacttca stctcattat tattgccttt atccagcagt 360
gcttatgaag ccccctaccc tgtcccattc cagaaaccat aagactcagg cagttcttga 420
ttctggaggc ctgcctggta agataagata gtataatttg gaactgagaa cataccagaa 480
acagcagaac gagggccaga gcagaaaaat gaaaataagt ggagacactt atggatacat 540
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tgaatgggga gaaccaatga atccattgtc ctctgcctat tttcctgtgc acagtcacat 720
tccctcctta agaatctncc ccttccancc tttacattaa ccaaggaca ctgaatcttt 780
ca                                                                782

<210> 78
<211> 278
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (8)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (27)
<223> n equals a,t,g, or c

<400> 78
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tgctgctcct tttgctgctg tcccatgtgc tcctgagaat gagaaccctg cctttgcaac 120
aaaccatgcc ccggtaaatg caaaaccaca tgctctgtgc cccgagagaa aacctctaac 180
cagcaaggaa aatgtattga tgcattcctc cattttggca cctgraagag agtcttggrg 240
aactgcagga gagggggaaa actggaaaaa aaaaaaag                         278

<210> 79
<211> 828
<212> DNA
<213> Homo sapiens

<400> 79
gccaatcaat gagcagtata gagaatttct ggaagggaga cacaagaagc tgttagaaag 60
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tttgggctct ctgaattttt tttagtatct gcaagtattg tacttgttca aatatgttta 180
aggctgcagg ctgtattcta aactccttga aagtgagaac caggtttcac tcatatttcc 240
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agcctatgtc agggaaggag aaccagagac agcaacctcg ggtgtgaagg gagtcagctc 660
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tgaacccagg actatggcct tctgccactg cctgctttcc tcttgctgct ggggcctagg 720
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<210> 80
<211> 342
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (198)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (215)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (319)
<223> n equals a,t,g, or c

<400> 80
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tagacaatat tgaaaaccta acctagaagt atgcacctgt aacaatagct aggtcttggc 180
caatgcctgt ggccatantt cagccattca tacantgctg agtgttcaaa gtctgttcaa 240
ataagggaaa caacgaggtg taaccaatcc agctgttctt taccttactt ccaaattctg 300
tacgtcattt cccattttnt gtctataaac cttcttccac ca 342

<210> 81
<211> 537
<212> DNA
<213> Homo sapiens

<400> 81
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gctcaccggt acaccagggg ttggaaaaac cacactaggc aaagaacttg cgtcaaaatc 120
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tctttatgaa gaagccacag catcctacaa ggaagaaatc gtgcatcagc tgcccagtaa 480
taaaccagaa gagctagaaa ataatgtaga tcagatcttg aaatggattg agcagtt 537

<210> 82
<211> 292
<212> DNA

<213> Homo sapiens

<400> 82
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wctgagccat tgccaaatgg taaagaaatg aaaagttttc acagtgacta ctgaatatac 180
caagagcttt tggcagtact gctggctttc tgggtgatta attaggtaaa cttggaatat 240
tcccagtaaa agtttgagaa tgcataaaat tataccattt tgaaaaatat aa 292

<210> 83
<211> 352
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (291)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (345)
<223> n equals a,t,g, or c

<400> 83
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gtttttggta ttctcaaatt ttatctaaat ggataaacta ttaacataga acataaaccc 120
caattctcca tttcattttt ctcttaggca tgaatcatac aaaactcaat atagagcaat 180
gtttgtaatg aattgttcta ttaacaaaga ggaggttcta agatrtaaag cctcagagga 240
acaggaagga aaaggcgggt ccataaggaa gatgaggtct taaccgggga ngatgctgct 300
tgaggagggc cagagacagt tgtgggagga aatcttttca ccccnttcat gt 352

<210> 84
<211> 404
<212> DNA
<213> Homo sapiens

<400> 84
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acagataagt cccagatagg rggctcactg atacttaatt ggccatgtca ccaatgtttg 360
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<210> 85
<211> 1555
<212> DNA
<213> Homo sapiens

<400> 85
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caagaagcag ccgccaaagt ccttgaggag tatggagctg gagtgtgcag tactcggcag 180
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gaaaattctc atccttgtgg aaggaatata tagcatggag ggatctattg ttcgtcttcc 540
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ggacaggccc tttgacgaga cgacgtatga agaaacagaa gactgagcct tttggtgct 1260
ccctcagagg aactctccct cacccaggac racctgtggc ctttgtgagc cagttccagg 1320
aaccacactt ctgtggccat ctcacgtgaa agacattgcc tcagctactg aaggtggcca 1380
cctccactct aaatgacatt ttgtaaatag taaaaaactg cttctaatcc ttcctttgct 1440
aaatctcacc tttaaaaacg aaggtgactc actttgcttt ttcagtccat taaaaaaaca 1500
ttttattttg caaccattct acttgtgaaa ccacgccgag ccctatgcag tctca 1555

<210> 86
<211> 455
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (430)
<223> n equals a,t,g, or c

<400> 86
ggcacgagcc agagccgact gcaaatcact gaactgagct ggcagctgct taggggtttg 60
catgatcaag gcgattttta taacctagaa gggcctggac tgtagaagca gattccagct 120
gaggcccagg cactgccttg ctgtggtgag cacggcggct ctgstcttcc ccgccgagct 180
ttctcatcag tgaagtgggg tagtgacagc atgcgagggc acggagctgt cagcaggctc 240
cagagaccat ggccataaag cactgacact gacacggccc cagcaagccc ttkgggaagg 300
gcagccacca cckttgctgc tgytgtcact tactgttgct gttgatttaa ggcaktacat 360
actcaggtyt catagcttgt aaaamaaagg aaaaatgaaa agtcaccatc atcccagcaa 420
aatgtaaggn tcccctgctg cccagattgg aatgt 455

<210> 87
<211> 675
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (427)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (528)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (564)
<223> n equals a,t,g, or c

<400> 87
ggcacgaggt cgggctcgga ggaggatcca gagacggagt ctgggccgcc tgtggagcgc 60
tgcggggtcc tcagtaagtg gacaaactac attcatgggt ggcaggatcg ttgggtagtt 120
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ggatccatct gtcttagcaa ggctgtcatc acacctcacg attttkatga atgtcgattt 240
gatattagtg taaatgatag tgtttggtat cttcgtgctc aggatccaga tcatagacag 300
caatggatag atgccattga acagcacaag actgaatctg grtatggatc tgaatccagc 360
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tccaccnctt cattcaagaa aggccacagt ttacgtgaga agttggctga aatggaaaca 480
tttagagaca tcttatgtag acaagttgac acgctacaga agtacttnga tgcctgtgct 540
gatgctgtct ctaaggatga actncaaagg gataaagtgg tagaagatga tgaagatgac 600
tttcctacaa cgcgttctga tggtgacttc ttgcatagca ccaacgggaa taaagaaaag 660
ttatttccac atgtg 675

<210> 88
<211> 493
<212> DNA
<213> Homo sapiens

<400> 88
gtcgccctag gctgggactc tagtaggtct tcggctcagt tttggctgca gcgcccgcgt 60
agatcgcttc ggccgsgttc tacgcccggc tcaactatga gcckgtgcgc ccaggcggcg 120
gaagtggcgg ccacagtgcc aggtgccggc gtcgggaacg tggggctgcg gccgcccatg 180
gtgccccgtc agcgtccttc ttcccgccgc cggtgccgaa ccccttcgtg cagcagacgc 240
agatcggctc cgcgaggcgg gtccagattg tccttcttgg gattatcttg cttccaattc 300
gtgtcttatt ggttgcgtta atttattact tgcatggcca ttgctgcatt tcaacagtat 360
gctgtcctga aaagctgacc cacccaataa ctggttggag gaggtaagaa atattttgtc 420
caaaatatta ggacataata ttaaattaag atatactaaa tcaatataag aagagttcat 480
catagtttag tca 493

<210> 89
<211> 416
<212> DNA
<213> Homo sapiens

<400> 89
gtggggatgg tgtcgcatag cagccgctgc cgctttggct tgctcgggac catttggctg 60
gacccagagt ccgcgtggaa ccgcgatagg gatctgtcag ggcccgcggc cgggtccagc 120
ttggtggttg cggtagtgag aggcctccgc tggttgccag gcttggtcta gaggtggagc 180
acagtgaaag aattcaagat gccacctawt ataaactgga aagaaataat gaaagttgac 240
ccagatgacc tgccccgtca agaagaactg gcagataatt tttgatttcc ttatccaagg 300
tggaagtaar tgagctaaaa agtgaaaagc aagaaaatgt gatacacctt ttcagaatta 360
ctcagtccac taatgaagat gaaagctcaa gaagtggagc tggctttgga agaagt 416

<210> 90
<211> 1467
<212> DNA
<213> Homo sapiens

<400> 90
ggcacgagtt catcttcatc ttctcagctt gctccaaatg gtgcaaaatg cattccagta 60
cgagaccgtg gcttcctggt gcagacaatt gagtttgctg aacagcggat ccctgtatta 120
aatgaatatt gtgtggtttg tgatgagcca catgtgtttc aaaatggccc tatgcttagg 180
cctaccgtat gtgaacggga gctgtgtgtg tttgcttttc aaaccctggg agtaatgaat 240
gaagctgctg atgaaatagc aactggagct caggtggtag atctactagt atccatgtgt 300
aggtctgcgt tggaatctcc tagaaaagtt gtgattttcg agccatatcc ttctgtggta 360
gatcctaatg atcctcagat gttggccttc aaccccagga aaaagaacta tgatcgagta 420
atgaaagcac tggatagcat aacttctatc agagaaatga cacaagcacc atatctggaa 480
atcaagaagc aaatggataa acaggacccc cttgctcatc ccttactgca atgggttata 540
tcaagtaata gatcacatat tgtgaaactg ccagttaaca ggcaattgaa gtttatgcat 600
actccacatc agttccttct tctcagcagt ccaccagcca aagaatccaa ttttagagct 660
gctaaaaaac tctttggaag cacctttgca tttcatggct cacacattga aaactggcac 720
tccatcctga ggaatggtct ggttgttgct tctaatacac gattgcagct ccatggtgca 780
atgtatggaa gtggaatcta tcttagtcca atgtcaagca tatcatttgg ttactcaggg 840
atgaacaaga aacagaaggt gtcagccaag gacgagccag cttcaagcag taaaagcagc 900
aatacatcac agtcacagaa aaaaggacag caatcccaat tcctgcaaag ccgtaactta 960
aaatgcatag ccttatgtga agtgatcacc tcatctgacc tgcacaaaca tggagagata 1020
tgggttgtcc ccaatactga ccatgtctgc acacgattct tttcgtcta tgaagacggc 1080
caagtgggag atgcaaatat taatacacaa gaaggaggca ttcacaaaga gatcctccga 1140
gtaattggta atcaaactgc tactggttaa aggaccacca tttaattaac atgattcgaa 1200
agccttcctc gggttcaaag ctggattttg aactgaagaa gattataaaa ttatttattg 1260
ttattataaa caaaattaac cctttgaata ctgatttttt ttcttagtat ttctaagtat 1320
ctcattaaat acctaaaatg gtataagatt tatcaattgt agggttatgg aatctagtaa 1380
taaaatttca acagcactta aactgaagtt tgggttgctc atacaataaa cagattgaaa 1440
aaacaaaaaa aaaaaaaaaa aaaaaaa 1467

<210> 91
<211> 1793
<212> DNA
<213> Homo sapiens

<400> 91
ccacgcgtcc gatttgtccc tattgttcta tttttaaata aatatacaat cattgttttg 60
cattgaaatg catatttgta cattttattt gataatatta ttttgggaaa ttgtaatctg 120
ttgttttgtt tgtttgttaa gggaagcacg aagaagaatt tacaaatgtg aataaaattg 180

tttaagatta ccaatagttt cttttctgga cttgaaatag ttacgtttct aaatatgaga 240
aaaataactt tgcctaaaat ttcagtataa tgaccaggtc ttctctccat tttagagaag 300
cagtccaatg tggaacagat aagacggcag cgatccagtg aggtcaattc cccacagagg 360
aaagctatgc atacctaact taatggaagg taaacttctc ttcaattaat gatgtcctcc 420
ttttctcaag gtgtccaaag acaggaggtg gtctgtaaaa ggttggatga caactccatt 480
gtccagaaca attactgtga tcctgacagt aagccacctg aaaatcaaag agcctgcaac 540
actgagccct gcccacctga gtggttcatt ggggattggt tggaatgcag caagacttgt 600
gatggtggga tgcgcacaag ggcagtgctc tgcatcagga agatcggacc ttctgaggag 660
gagacgctgg actacagtgg ttgtttaaca caccggcctg tcgaaaaaga gccctgcaac 720
aaccagtcat gtccaccaca gtgggtggct ttggactggt ctgagtgtac tccaaaatgt 780
ggtccaggat tcaagcatcg gattgttctg tgcaagagca gtgacctttc taagacattc 840
ccagctgcac aatgtccaga ggaaagcaaa cctcctgtcc gcatccgctg cagtttgggc 900
cgctgccctc ctcctcgctg ggtcacagga gactggggcc agtgttctgc tcagtgtggc 960
cttggacagc accttggctg atgctggaag aggagggcag tcagtgtcac ttctgggatg 1020
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tactaaaaaa ggaacggtaa atgtacccta atgattaaac cccgtgagat acatatgatt 1440
tccaaatagt ccatttcatt aggaactttt ttgtttgaat gaatgtcaca taggtatcct 1500
cagtaacaca gaacgaaatt acctttgtat tattgtgatt agttgttgct tattatttta 1560
tactcagtaa taatgtggta cactgttaat ttttttgctt ttgtaaatta tattctaatt 1620
tattgccatg tttcctaaca cttgtcctac attcattctc ctgcttgtaa tgaaaatgaa 1680
aaaatcattg taacacttga tggagtgaaa ttccacgcca ggcacagaat tttttgaca 1740
tagataattt agtaaaataa aaattcagct tataataaaa aaaaaaaaaa aaa 1793

<210> 92
<211> 538
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (24)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (53)
<223> n equals a,t,g, or c

<400> 92
gcccaaggat tccggcacga gganttkttg ttggttgggg gccttttggc sgntgacgga 60
gactgcccag gtgtggtcac catgttcctc tccgcggtct tctttgccaa gagcaagtca 120
aaaaacattc tggtgagaat ggtgagcgaa gctgggacag gtttctgctt caacaccaag 180
agaaaccgac tgcgggaaaa actgactctt ttgcattatg atccagttgt gaaacaaaga 240
gtcctcttcg tggaaaagaa aaaaatacgc tccctttaaa cggtggattg aaaatgactt 300
tgatttataa agagaagact gagggcgggg atactgattc agaaatcctg tagcgtgtaa 360
taaaagaaga ggaaatggca tggaatcact gcctcctgtg atttgaaggc cattgtgaag 420

gaaaacaatg cagtgaaaga aagttcttca tattaggaca gatatcattg catcacattt 480
atttatcttt ctgggtattt ttatagccct taataaaaaa tattaaaatw gwaaaaaa 538

<210> 93
<211> 483
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (444)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (483)
<223> n equals a,t,g, or c

<400> 93
gggaatctat cataactagt ctagagattt ctcaccaagg gaaattttcc ttatctaaaa 60
gaggaacttc aggtctcaac cctgccagtc acacccaatt aatgtccttc acaaaaataa 120
acagcatatg ttccctttca atttgagttc agtgagctca cagcaaaatt taccttttaa 180
ttttcttcag caaatccaag acgaatatac aaaggatgag attagataaa gatttcagtt 240
tcccgtatgc caccgctggc cgccaatttt ccaaaaaagc ctggctcctc ttttcctgtt 300
cctccatcca agcccccaaa gatctctaac cagaawtaaa caggaagact cagtgattta 360
caaaagacat tttagtttta cacgtacaga aaattctacc cagcattaca gaaattctta 420
gacttcttaa aattcccgga tttnccctgg tatttaacat ttggataagg gagccatggg 480
ttn 483

<210> 94
<211> 719
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (619)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (633)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (643)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (646)
<223> n equals a,t,g, or c

<400> 94
ngggaattgc tgagatgaca gtgtcccaca cagcttcaaa taaaatccat ggaaagatgt 60
tgcatttgtg gaataagtgc ttacttgaaa agcatgttct tcttttattt tcttactgtt 120
aagaattttt atttgtagga tgtttgtttt aatttaattt ttttaaggga tgggggccat 180
catgtggaaa ccagaaaatg gggaaagtgt gaactatcca gacaaagatt cattttgtgt 240
ctatatttgt ttttaattgg cctcatttca aatgtattaa acagttccat acctggattg 300
ggtgtttgta atggttacca aaaaacaaac aaaaaaagaa agaaaaagga aaaaaaaaaa 360
gaaaataatt gtgacatgct tttatcacta ctttattttt caaataacat gtaaatattg 420
taatccattg gattttgttt tgctaacctg ttaataaaaa tatgggacca ttatcctttt 480
aacaaggcta gaatgtcatt tttttctttt tcaacatata cctgatattt tgtggccgca 540
cattttggrt gcattattat aattckgttg actgtaatga catagaatta cacattttkt 600
gktggttaat tatacagang acattttttt canagcttga ganaanaaaa taaatagcaa 660
aatgataacc tattgactcc agtaatcagt gtttcccaat acttcataag aaataggga 719

<210> 95
<211> 613
<212> DNA
<213> Homo sapiens

<400> 95
tattcagcta ctatacagaa aaaggatgaa caaattaatt tatttctaat tgagccagtt 60
agacataatg catataacgt gatatttggt tcatgaaaga gttgttttca tgtggttatt 120
gtagggagta tatataattg tggaaggggt atgggaagag ttgtgtatag ttagttgtta 180
tctctacaag tttgaaagtt ttcccatcaa acattatcaa tataccaatg ttttaaaaat 240
tgagtgaggg ttattatttg tatttgatga aagaaaatcc aaataaagcc cacctagaaa 300
tagatatttt attatatatg tgctatagat atacctatat agtacaaata gacatgtgtg 360
atgcatatat acaatgttat atatgtgtat atgtctgtat acacactgag tctgtaatat 420
gtatacacta aatttgtgky amgctaacak cttcagggtc tgcactgtga actccccкgg 480
agataagtaa gtccacttta gaataaagag ttcttttgag acttcagtta ctaacgtgct 540
ttaagaggta tctactttat aactgaattc tatgtcgttc atacgtagag ttacagtaag 600
ggtctagtat gtc 613

<210> 96
<211> 816
<212> DNA
<213> Homo sapiens

<400> 96
gggaaaggag ggtcaggcga gtccacgagg aggttcgagt gaagatcaaa gacttgaatg 60
aacacattgt ttgctgccta tgcgccggct acttcgtgga tgccaccacc atcacagagt 120
gtcttcatac tttctgcaag agttgtattg tgaagtacct ccaaactagc aagtactgcc 180
ccatgtgcaa cattaagatc cacgagacac agccactgct caacctcaaa ctggaccggg 240
tcatgcagga catcgtgtat aagctggtgc ctggcttgca agacagtgaa gagaaacgga 300

ttcgggaatt ctaccagtcc cgaggtttgg accgggtcac ccagcccact ggggaagagc 360
cagcactgag caacctcggc ctccccttca gcagctttga ccactctaaa gcccactact 420
atcgctatga tgagcagttg aacctgtgcc tggagcggct gagttctggc aaagacaaga 480
ataaaagcgt cctgcagaac aagtatgtcc gatgttctgt tagagctgag gtacgccatc 540
tccggagggt cctgtgtcac cgcttgatgc taaaccctca gcatgtgcag ctcctttttg 600
acaatgaagt tctccctgat cacatgacaa tgaagcagat atggctctcc cgctggttcg 660
gcaagccatc ccctttgctt ttacaataca gtgtgaaaga gaagaggagg ttagccaagc 720
ccccacccca tcccactccc cttccctcmc cagatattta tgtgaaatga actgcagctt 780
tattttttga aataaaaact tttaaaaagc aaaaaa 816

<210> 97
<211> 577
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (38)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (575)
<223> n equals a,t,g, or c

<400> 97
cagaagccaa aaaggtctta aaattggaaa tagatgtntt tattgtactt cagccaacag 60
caagccaggg gaaggaacat acataaatat gacaggtcat atatgaaatt tggctctcct 120
cctatcaaag tagcctagga gcttggagga agcctaatta actaaaacag gaaaaaagca 180
tactcatctg atgtaaaaac tcatcagctg taaattacca acattaaacc agaagtcatt 240
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agtaacattg ctttaaagrc ataaagcttk tcctggtaaa catggtctaa atgagaaatg 360
cctccatctt ttcaggtaga accagatttc aggcatagct cagctacatc tgtatttgaa 420
atacaataaa aatatttctt atgtctctgt attctctttt aaaaagaact gctgactggc 480
tcctgtctct tcagtaacac tgattttttt ttaaagaagt gatatgttgg actctgttgg 540
agaagaatga gcactagtat tcagccacaa gtgcnat 577

<210> 98
<211> 484
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (456)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (476)
<223> n equals a,t,g, or c

<400> 98
cttgcagtcc acttgctgaa gaagttgtgt catttctctg gaagaatttc caaaattctg 60
gatttttttt tttttttgga gtatttcatc agctgaaaag tgattctyac tttgagtttt 120
cttcctatat ttgtatagtg agttcctttt tccttcctct ttatccctcc tgttttactt 180
tatacctctc tattccttgc tcaaattatt gcaaaagcct ctatagaaag tcctctgtga 240
tctgactcct gcagactctt ccagattttt ctgcccaagg cctttactga gctcaggact 300
ccagctaaat caaratackc atgttctcac ccagagtgac aaaatcctgc agataggttt 360
aagacctagt gggmtcagag cagtagctac tgggaagtta aaaggaaggg gttagaaaat 420
gaatgggaca aaggcacact tctgatggag atgaancact tgaaagtgag tggtgncttt 480
ggag 484

<210> 99
<211> 441
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (328)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (331)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (332)
<223> n equals a,t,g, or c

<400> 99
aattcggcac agggaaaaag gctgagcgga gagccgtgct gcctggcccc tcctcaccgc 60
ccttccccgc acctcttggc tgtaccggga gcctctgaag caccggaaat gaagggtttt 120
ccaggcctgg ctcttcacts catccttcag gggaactttg aagccatgga gacatctggc 180
tttggagcca tggcgattcc cctgccactc tccttgctgg gataaagcca gggcgtggca 240
tcctgggatg atgttccctg ctgctgagtg tgcacacaac ctgagctcat cctgtgtacg 300
tcagctacac atgctcgcat ctaatttncc nnaacaacct agccagtact attgcttctc 360
ctcctcttac agatggggag atgatgacat atagaggtta acttatcaga gaccacacaa 420
aaaaaaaaaa aaaaaactcg a 441

<210> 100
<211> 524
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (510)
<223> n equals a,t,g, or c

<400> 100
aaagaaaacg aaaaagaaag cccaaggcaa agaaggggga aggaaaacaa acttcgccac 60
tctytcttct ccttcctaac cctttgtyta gagcaccaca ccgctcacaa actctttcca 120
aatgctcagt tggctcccaa agttggagcc tggcatgggc akggagccca caaaactcta 180
accaaactgg akgctggcat gggagaartg cttctggttc actcttccta ccctctccct 240
cctaaccctc tccttgcctg acagggagcc cctgtggcct ggactctagg ggatgccgcc 300
accagaaacc cctctgccaa tccctamctt gcaccctggg aaytgcagta acttattctc 360
aaaggcttta aacacagaga tcctctcagc ggccgtgggc ctgccccttg tcctarccct 420
tgccacgttg agggtccaac ctccaaggga caggcactgc cccaccaacg gcaaatccaa 480
aattctttca aaaaaaaaaa actgaaaacn caacccaaaa aagc 524

<210> 101
<211> 614
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (355)
<223> n equals a,t,g, or c

<400> 101
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cctgcaggtg gactacgtct tccggggtgt ggagcatgcc gtgcgggtga tggtttctgg 120
gcaggtgctg gagctggarg tggaggaccg gatgacggct gaccagtggc ggggcgagtt 180
cgatgctggc ttcattgaag atttgactca caagacaggg aacttcaaac agttcaacat 240
cttctgtcat atgctggagt cagccctcac tcagagtagt gagtcagtca ccctggacct 300
gctgacctac acagacctgg agtccctgcg gaaccgaaga tggggggccg ccagntcctt 360
ggcccccagg tcggcccagc tcaactccaa gcgctacctg atcctcatct actccgtgga 420
gtttgacagg attcactacc cgctgcccct cccgtaccag ggcaagccag accccgtggt 480
tctgcagggc atcatccggt cactgaagga ggaactgggc cgcctgccca gtccctgccc 540
tggccccgtc cctcctgctg cccctggggg tctcaggtgt gtgaggccct gaccctgccc 600
tctccccagg cagt 614

<210> 102
<211> 544
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<400> 102
cnaanntgan anaaccctca ctaaagggaa caaaagctgg agctccaccg cggtggcggc 60
cgctctagaa ctagtggatc ccccgggctg caggaattcg gcacgagaga aaaattattt 120
gtatataact ttaaaaggag tagaagggct ttttgcagag ttattacgtt tgaagtatac 180
tttatttctt gaaaaaatta cagatttttt gtaaataatg atgtaattca actctcaaaa 240
tatttcctac tgtttcttta ttccagttgt attcacatgt gaaagcatgt gatcagttat 300
tgctgcatta aaaacatgag tcttttttat taggtggcca ttatttatga tcttttctat 360
gaaagagtaa ggacattaaa atgtaagatg catgatgaaa aattaagtga agaggctctt 420
tatggttaat ttatattgaa taatgcatta ggtaggtgtt cagagtaata ttttgcgttg 480
tgagaacatt tttaatttta tttaaaatta aatgaaaata aattagtata ttattgtact 540
aatt 544

<210> 103
<211> 1887
<212> DNA
<213> Homo sapiens

<400> 103
ggcacgagag gaaggaactg gtttcgggga gccctgggcg gggcggctgt ggggaggaag 60
gtgacgtgca ggggaccaga ggctctgcac tgctcctagg acagctcatc tgtaatcaga 120
aaaaaaataa ataaaataca gaacgctgac tcctccgtga gacagatcgg ggaccttagc 180
actttaatcc ctcccttctg agcgctcggt gtgcactttt agactatagc tgtttcattg 240
acgtgtcact ctccatccag tgtccttgat gtggctttta gagacttagc agaaaattcg 300
acacaagcag gaacttgatt ttttaagaaa aaatattaca ttttgaggac attttgacaa 360
gtaggggaag agagggcttc tgttgttttg ttttgttttg ttaactaaac ctgaagtatt 420
aattccacaa agacactgtc cctcaggacc actcaggtac agctctgcca gggacagagt 480
ctgctagtgg gaggtctcag gtggggcggt gtgttctgtg ccatgaggca gcgacaggtc 540
cagatggatg tcgtcaccac cttcctcagc tctcatcacc tggtcgtacg ccaggcccac 600
ctcttcccag caagggacgc caaagaactg cagtttttat tctgagtctt aatttaactt 660
ttcatcatct tttcctattt tgragaattt tttgtaatta aaagcaatta ttttaaaatg 720
tgcaagccag tatctcacaa ggcatggatt tctgtggaat ttatttttat tcaaataacc 780
atatttatct ccaggctgtg gaatcgccac tttctttgtg aagacagtgt ctctccttgt 840
aatctcacac aggtacactg aggaggggac ggctccgtct tcacattgtg cacagatctg 900
aggatgggat tagcgastgt gggagactgc acatccggac ctgcccatgt ctcaaaacaa 960
acacatgtac agtggctctt tttccttctc aaacacttta ccccagaagc aggtggtctg 1020
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agacttgctc aaaagattcc tttttatcat ccccacgctg tgtaagtgga aagggcattg 1140

tgttccgtgt gtgtccagtt tacagcgtct ctgcccccta gcgtgttttg tgacaatctc 1200
cctgggtgag gagtgggtgc acccagcccc gaggccagtg gttgctcggg gccttccgtg 1260
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gttccaggga ctgktggagg tggatggcag gtccgactcg accatgactt agttgtaagg 1380
gtgtgtcggc ttttycagtc tcatgtgaaa atcctcctgt ctctggcagc actgtctgca 1440
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cagcataagc tgatggtatg taaggaaccg atgggccatt aaacatgaac tgaacggtta 1560
aaagcacagt ctatggaacg ctaatggagt cagcccctaa agctgtttgc tttttcaggc 1620
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ggctgagaaa catgttgctg agatgcaatc ctcagtgttc tctgtatgta aatctgtgta 1740
tacaccacac gttacaactg catgagcttc ctctcgcaca agaccagctg gaactgagca 1800
tgagacgctg tcaaatacag acaaaggatt tgagatgttc tcaataaaaa gaaaatgttt 1860
cactaaaaaa aaaaaaaaaa aactcga 1887

<210> 104
<211> 253
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (226)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (228)
<223> n equals a,t,g, or c

<400> 104
agattttgaa cttaaattat attctatatg tgtatcttcc taggcaaaag ctgtaatttc 60
cagagagacc attaggaaca ggtagtatct attttyctcc attatttatt tctagaaact 120
cataaaatgg attgtatttt tctataagaa caaaatatta attaaggtat agatgactga 180
ccaagggstt aatcaaataa aatgactaac agcatctatc cataangnca cacaagcctt 240
atgttctcat ctt 253

<210> 105
<211> 705
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (671)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (688)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (698)
<223> n equals a,t,g, or c

<400> 105
cccaatctct agctagtgtt gcttatcaaa taaatgcatt ggccaacaat gtactccagt 60
tgctggatat ccaagcctct cagcttcgga gaatggagtc ttccatcaat catatctcac 120
agactgtgga tattcataag gagaaagtgg cacgaagaga gattggtatt ttgacaacaa 180
ataagaatac atcaagaact cacaaaataa tagcacctgc gaatatggag cgccctgtaa 240
gtatattcgg aaacctatcg attacacagt tctggatgat gtgggccatg gtgtcaagtg 300
gctaaaagcc aagcatggaa ataaccagcc tgcaagaact ggcacactgt cgagaacaaa 360
tcctcctact cagaaaccgc caagtcctcc catgtcaggc cggggaacac tgggacggaa 420
tactccttat aaaaccctgg aacctgttaa acccccaaca gttcctaatg actatatgac 480
cagtcctgct aggcttggaa gtcagcatag tccaggcagg acagcatctt taaatcagag 540
accaaggaca cacagtggaa gtagtggagg aagtgggaag ttcgaggaaa acagtggtag 600
cagtagtwtt ggcwttcccw ttgctgtgcc tacaccttcg gcacccayta ttttgaaacc 660
atttgttgat ngttccaatt tccaccgnca ccactttnca ccaaa 705

<210> 106
<211> 920
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (920)
<223> n equals a,t,g, or c

<400> 106
gctagaagtg gattggagcc tctttgatgg atttgcagat gggttaggag tggctgaagc 60
catttcctat gtggaccctc agttcctcac ctacatggca cttgaagaac gcctggccca 120
ggcaatggaa actgcccttg cgcacttgga gtctctcgca gtggatgtag aggtggccaa 180
tccaccagca agcaaggaga gcattgacgc tcttcccgag atcctggtca ctgaagatca 240
tggcgcagtt ggtcaggaga tgtgctgccc catctgctgt agcgaatatg tgaaggggga 300
ggtggcaact gagctgccgt gccaccacta tttccacaag ccgtgtgtgt ccatctggct 360
tcagaagtca ggcacctgcc ccgtgtgccg ctgcatgttc cctcccccac tctaaagacc 420
aaggccgttt actcctggtc tgattatttt ccccatctga aatccacaat actgcaggag 480
ccctcttgaa attaacaatg gaaataaaac caatcagtca gttagcctaa acctattgat 540
tcctcgtgat tatttccaat gtgaaaacag ttgtgtatga ttgcattaaa aatcatatca 600
tcttttagag gttagaaaag ggaaaactaa actttctaaa tgctacttga gattgcagta 660
agaagatacg ttttctaacc tgaaagttaa atcgcatttg ttttcttcag tagaatggga 720
atgtgttgct gttacttgta atgtcaagtt tatctgttaa atatgtccaa aaggcaaaat 780
catttttgtt gcatgttatg ggtcgatgtt cctgtaattg cagtgccgta aaagcttatt 840
aaagttgttc ttttggtttt aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 900
accccggggg ggggccgggn 920

<210> 107
<211> 466
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<400> 107
nggcccntac tcgggcgctc ccagarggag ccacctctca gtgcctcamc tccccctgcc 60
tcccagcctc cgcagatgag gttcctgccc cttcctcctc gtaaccaaaa ccctcactgc 120
tcccaggacg gtcttattta taaaccagat acatgttctt agtctggtcc cagaccaagg 180
agctggtcag acggcccttt ctaatcctac atgttgagct tatgtaaaaa atgttgtttc 240
ctcctgtttt tggttccttt cttacccaca aaccattact acttgaaact taaaaaactc 300
gccaagtgta aaggctaaag agaagcagtt tgacggacct tgtgatttgt actgtttgct 360
gcggagctat ttaaagattt tggaataaat atacaaaact acggttgtga aataaaaact 420
taaattgtat attttgaaaa ataaaacact gaaaagaaac aaaaaa 466

<210> 108
<211> 323
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (111)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (113)
<223> n equals a,t,g, or c

<400> 108
actatttttt tattttataa atctttgtag aaataagcaa tgaaatacta ctttcatctt 60
ttgaaatggg atttttcaag gcagtgtcct tttggcatta aggtaggggg ncngttaata 120
ttctctctgc cttgtttcca cgtggaatca atattaaagt catggacatt ttaaaatctc 180
aatttaattt cttcttattt actatgcagt atagccgtgg aacaagtaat gtagatttag 240
ttttctcatc ttcaaatgcc ctgatcaccc tacctcacag ggttgttgtg gggrtwaata 300
aaactttatg gragcaaaaa aaa 323

<210> 109
<211> 448
<212> DNA
<213> Homo sapiens

<400> 109
tttttttcaca gcatattaga aatgtttatt aagaataatg gcatgaactg cttttaacaa 60

tttagaaaag acccattccc cccgcccscc cccgccccca gatccagggc acttcctcta 120
agtaaayaca aatatttctg tagtgaactg tatgcatatt cccactgagt aaaggttata 180
agaagcctca ggtcaggtct taccaccaaa cttgaaaaca cttggaatgc agctgggcag 240
ggacttgagc aggttttgtc ttgataagca ggtaagaatg gcagaacact ggcttattgt 300
caaccaatgt tttttatat acctgaagta ttcacagcaa cttattttaa gaagcttttt 360
aaaagttcta cacctccacc cccacaactc cccaatccag aacatggaac aagggtgtgg 420
agccgtttga tggacttggg tctgttcg 448

<210> 110
<211> 849
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (32)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (33)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (39)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (841)
<223> n equals a,t,g, or c

<400> 110
ggtgactccg tctcaaaaaa aaaaaagaag gnngtaccna cagtatacgt gtgggcactt 60
gtgcttgagc ctgtattaaa ggaatcaggc caggcacagt ggctcacgcc tgtaatctca 120
gcacattggg aggctgaggt gggcggatca cctgaggtca ggagttcaag accagcctgg 180
ccaacatggt gaaaccccat ctctactaaa aatacaaaaa ttagctaggc ggggtagtgc 240
atgcctgtaa tcccagctac tcaggaggct gaggccggag aatcgcttga gcccgagagg 300
tggagactgc agtaagccaa gatcatgcca ctgcactcca gcctgggcaa cacagggaga 360
ctccatctca aaaaaaaaaa aaaaaaaaaa aagacattca acttgaggct cctgttagtt 420
aagctatctt ctttcacttg aagcaggttt gagaggccta ggccagaatt taaattcctt 480
ttatgaatag atttcccttt cttcctgacc ccaaggtcag aggagactat atattccatg 540
gctgcctcta agactaggaa taggaatatc tgaaaacagc atttctaagg gtggtaacca 600
caggtcgatt ttaatacgag tcctttttct tgtagaggta agtaaaatct tcctgacaag 660
gtagtcctct tttcacggca cagacaatgg gctttctgtt tatgaggggt gagaagtgat 720
gtttgttact atgttctcca gcaagtaaac attcctctgc tcacctccca acaagactaa 780
cagtcttttt agaagtaaat atattcaaga caaacgagaa aatcctggct acccaagtcg 840
ngtatatac 849

<210> 111

<211> 876
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (871)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (876)
<223> n equals a,t,g, or c

<400> 111
aaaaaaaatt tacaaaaaaa caamcacama aaaawtatct tttttaggcc agagttttct 60
acaggtatta atgaatattt ttcttaatcc ttataagttt tatgtgttta atatttctta 120
ataccggtag cattaattta tacttttgta gcaacacaat atttttataa acagccggtg 180
cttggctcaa gtcttcacga ggggtttagg cagggccatc ttggggaccc tgtgtaccat 240
gtactgtatt taaaaaaaaa aaaagttacc tattgtcaca cttgctgtgt taattaacaa 300
aagatgttgt gtgcggtctc ctgtatcggt gtggatccaa cagctctcca gggagtcaca 360
ttgcatgggg gttgagttga cggttcttgt gatatgtaaa cccccgagac caaacttgag 420
ggtttattta gggtttctg tttgtccttt gggtttttgt ttcactttgt tttggtgccg 480
tttctccatt tacagccaaa tcagtttcat gatgttcaaa acatttactg atgtcaaatg 540
gaggaaagga acagaaaaaa agatttttac aaagtaataa aatttaaaac tgagctgttt 600
aatgttgctg tttttacctg tctgttcttg tccaaaagtg gaacattccc agggagaaga 660
ggaaggttcc actcggttct ttaagtcgcc aaaagcccca gcccgggatt cagtacctcc 720
cctgcccccc gaattcttgc agcactattt cccagttggt tgatgccaag gcaaaaagat 780
aacttttaac agttagagag gatcagttgc ttaaatgatt tcatgtcagt gttgtattta 840
tggttttaca ataaaacaac ctttaggaaa naaaan 876

<210> 112
<211> 382
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (100)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (105)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (341)
<223> n equals a,t,g, or c

<400> 112
gcctcccagg ttcatgccat tctcctgcct cagcctcccg agtagctggg actacaggca 60
cctgccacca cacccggcta ctttttttata tttttagtan agacnggttt catcatgtta 120
gccaggatgg tcttgatctc ctgacctcat gatccgccca ccttggcctc ccaaagtgct 180
gggattatag gcatgagcca ccgtgcccgg ctattttcag ttcttatgct gtgaaccact 240
ttgccttgta gctttttcta tctttccaaa atcctcactc tgttcattgt ttgtctcagg 300
ggaaaatctt cccccaccga gcttgtaaaa aaactttaat nattgggtgg aggataattt 360
aggatgggta tttattggag gt 382

<210> 113
<211> 1070
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (334)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (882)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (961)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1018)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1070)
<223> n equals a,t,g, or c

<400> 113
ggcacgaggg ccgactggac tttgtgagct ccagctgcta cagttgactg agttcaggct 60
ccatgtagct gggatatact acatggttac ccctcacccc tatggagctt ccaaaagaga 120
ccctccctca aagcacagcc ccttctctga gtgcaaataa tggccatcag aggtcagtca 180
caggtgttag gcaggcatct atgaagctgg ggatgatagc actgacttca gtgcttggac 240
gagaaccagg agagagtgtg tagaaaaagc acagccagcc tcccataaaa ggacagaytc 300
ctgtgacaac cttgtcactc tgttcctccc tgantactct ggggaggtgg aggccagtgg 360
gcagttctaa agctcagcag gtttggagcc attgggtgtg gactcctctc ccagtgttcc 420
tcctgggtgt tcacagatgt tattgaaatg cacactggga accctgcaca ggtaaaacta 480
aggytttatt ggcgtgattg ccaaaggtca cacagggtgg tttggyagag ctgggattag 540
aagcccagcc tgtytctytt cagtagtaat ggagtcctgg gaggtttact aggctttagc 600
ctcaatctgt ggcggcaggg tccacagccc tggggagtga cacagtcatg gtccccatga 660

ttggccagga cctgtktgga gagacacagg agacaagacc ctgctcttcc aggccagaag 720
ggaggggagc cccagagctg ggcagtggca tgccccacag cctggccacc tgcttcggct 780
acgcaccatg cagcagctgc acctggctgc ctcgggaaaa ctctgacctc tctgggaagt 840
ggagccagtg gctctgtggg cgtcctttcc tgcagcctgg anagcaaagc ggctttccct 900
gggactgtgt ggctcctgtc ccaactggcc tccccattcc acattcccat tgctggacca 960
ncaccaggac tgggcacagg gcttcctttt gctgattcat ttccccccta actcatcnaa 1020
attgaacccc atctgattcc cacatgctgg ccctgaaacg gtacaaaggn 1070

<210> 114
<211> 371
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (360)
<223> n equals a,t,g, or c

<400> 114
gtctattaga aaacggtcct aagagattct ttggtgtttg gcactttaag gtcatcgttg 60
ggcagaagtt tagcattaat agttgttctg aaacgtgttt tatcaggttt agagcccatg 120
ttgagtcttc ttttcatggg ttttcataat attttaaaac tatttgttta gcgatggttt 180
tgttcgttta agtaaaggtt aatcttgatg atatacataa taatctttct aaaattgtat 240
gctgaccata cttgctgtca gaataatgct aggcatatgc tttttgctaa atatgtatgt 300
acagartatt tggaagttaa gaattgatta gactagtgaa tttaaggagt atttgaagtn 360
gggtgggggg g 371

<210> 115
<211> 581
<212> DNA
<213> Homo sapiens

<400> 115
tttttttttt tttttttttt tttyttgagt attccagcat tatttatttg atcagagtaa 60
aatacacttc ccatcactac aaactgagca caactacagt tgtctacaca ttcatatttt 120
tgacgtgcca acattttgca ttctacatga aacatttggt ttaaacaaaa tcttaagaat 180
tctctatttt gtttcccatc ttccctcctg ttctctccca tcctccaaag atgttttata 240
ttaactgcta tgagatttat ttgccggtca cgtaatacgg aggacagcag ggaacaacac 300
aagatttacc atgcctaggg gatgaatggc aaacccaact ttggctaatg tcattgagaa 360
caacttggga agcgtgasag gaggatatct catggaagtg ggcagtgaac ctacatttcc 420
atttatcaga agcaaacatg ggaaggttac atacatgatg aagtattgga agttaaagac 480
ttaagacaca aaatcactaa tttaaaagra cmtgcmacmt grgtatcaac ttgctatgta 540
gkgtacatgt aaatgaccca aatattcacc tctagcatcc g 581

<210> 116
<211> 705
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (681)
<223> n equals a,t,g, or c

<400> 116
atcggacggg cttaacatga aagcctatag gtcattcttg ctctgggatc tacaggcagg 60
gtaggcacag gtgcagccta agaagggaac ctgcttcctc tcccttccaa agacagtgac 120
agctgactga gggcaaagag caggcaccac tcagaacgtg gtgagtacag ctcagctcag 180
cactcagtca gtggtaactt gtgcccagcc ctgtgctagg cgctgacatt aacaggagca 240
accagggccc aattcctggc cttggagctc aaatctttcc tttgattttt gctcctgatc 300
atcaaggccc cagtggcaac catgtggtaa gtggccaacc aagccctacc cagggtcacc 360
caacacactc tgccttgagc ctctcctcag ggtctattcc ttgcgtggat tatgtggccg 420
tagcatgtta cagttcaaac atgtctccac taccctgtta agagcagcct gggaacgtac 480
aggccatcaa gactatttat ttaaatacaa aaaaagggga aaacacacac acggaaaaaa 540
aattgtaagc actttttttg taaaaccaat gtctgttttg ttacatacct ttcatgtcgt 600
gctttgtaaa tgtcttattt gtgtaataaa gttaatgcaa gtaaaaaaaa aaaaaaagat 660
gggcgaagtt atcccttgtg nggtaattag tttgctgcgc gttta 705

<210> 117
<211> 1196
<212> DNA
<213> Homo sapiens

<400> 117
gcgaccgcct cgcgtacccg gcttgcggtc cacgagcgag cacgcccggg gtggcgatgg 60
ggtcgcgccg aggcagcgga ggttctgcgg gcgactggag gttggcagtg ggcgggagaa 120
agaggaaggc aggcgcggct gggcctcggc ctctggcgcc gcggtaccct ttgtctcggc 180
agcctgacgg ccccgccggg ctctccggag aggggaacgg gcggcgaggg tggcgggtcc 240
tgggcgccct gtgctgcggg gccgagaggc gctcgggtcg cggcgggatc ggccggacca 300
gacagggtta atggaagagc ctggccagtc ccgcgcgggg cccccgcagc gacagccttg 360
gccgcgggga ctggagtcct gagggggaga agcctgccgt tctgaaggct cgggacttct 420
gccccaaaga cttcgccgcc gagaactgcg ggtgcactgc ctcagggaag aagttgagaa 480
ttttgccagg tcatctctgc cagggcacag ttcatcactg tgtgtttagt gtgtttcggt 540
gaagctctcc aagtgtgttg aatcagcgtg cctagcctca agggtgcatc gtgaaaactg 600
aaaccaaagg aatgatacag gcctgctttg tgtgtgtctt cccactttaa gcttgttttc 660
agtacaaata ctcttgcttt aaacctgatt ggactgtggc gagcggacat ctgttcaaag 720
gaggggccga gaccacagta cttctgaagg gggcttgata atgtggaaac attttaagtt 780
ttctctccgg actgttttgc tctctcaatt caggcaagtt actgaagtac gtttttatc 840
tagaaaaagg tttgatgtag tctgtaaatg gtccttgtaa agtacattgc catctcagaa 900
ttaaaagatc cactctcatt tattatgcag aagttagtgg tcattctttc ctgtagatag 960
tttatctcat gtaaagaccc acccagcttg gtttaaattt ttttctcact gacgtataac 1020
catcagcttt gatacttcca ttttcaggct cagactttga atttaaggaa actaaagatg 1080
actttatttt cttttctctt ggtttttttt ttccaaaaac aaaaaataaa tccattacat 1140
gttaacataa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaacggacgc gtgggc 1196

<210> 118
<211> 975
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (794)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (845)
<223> n equals a,t,g, or c

<400> 118
tgtccctttt tattctagag gcttttcctt taattcagag attagtggag ataataacgt 60
cagtcaaggc taatgtggta catggaactt gctaatggag gttggacatt ctgtttcagt 120
cttacatgga tattgtttca ttggtgttga ggaagaaaaa aattagatac taccatgcat 180
tgggacagca taattctaat attacattga atatggcttt ttaaaaataa gtattaaaaa 240
gccaatcgtt ttctccattt atctatcttt tttgtttgtt tttaatttgg ttgattgata 300
tgcacccagg ccgtcttatt tttacttgtt aaatgtctgt ctaggaagaa ctgtgattgg 360
aaaggaatta attattatac aaataaatct ggtaggatat gagtggagta agtttgcttg 420
aaacagaagt atattttcta ctttgaatca cctcaccaga gtcatctgtc aagaattatg 480
tataacaatt tatctttatt gcctacatac aacatacttt ttctgaatta agataacttc 540
tatttgtgag ttgaacttca ttatctgcca ttttgtggaa tcaaccttac attytttggt 600
ggractagag ctgattgtca ccacaaggtt atatgacaac tctgttctar grcttatacc 660
yattatatag ggktatacct tttttcttat gcctcagctc tgtacctgac aatttatgat 720
tcagtggagc caagctagaa ggaacaaagg tcatctaaca ctgtgatggg gatgaattcc 780
tgagttttac ctgnacaatg aggtggtgcc ccggaattca caacagagta gtgatagagc 840
ataangatgg ctgctccaga tgactcttgg gtttaagtgt acttgtgatt gaacaagatt 900
tttatctatg aagcttgatt ctacaaccaa aataatagaa atgggggggg ggggaatcat 960
gtctgcttat gcttt 975

<210> 119
<211> 331
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (331)
<223> n equals a,t,g, or c

<400> 119
catatattag tgtgctttga agttgactga aagatatact ggatatcata attatataat 60
ttctaaatag atttctttaa atccatgcta tgttttcttt ttcagtcagg tcctacagaa 120
tgactattgc acttggtcta ttgttttaat agtaaatttt gttattaatc tcctatgtgt 180
taaacgtggg taattgtatt atgttaatac atacttaggg aggaaaagca ggtggatgta 240
aatcagtgat tcccaacttc agcagatggw tagcmgtggg agggtatcct tggagctttt 300
tgtaaatatt tccaaaaaag gggggggggg n 331

<210> 120
<211> 233
<212> DNA
<213> Homo sapiens

<400> 120

tcgacccacg cgtccgccca cgcgtccgca aaactgagag ggataggaaa gaaaaactta 60
tccaggaagg aaaattggat cgaacatttc acctctcata ttaagtctgg caatgatgac 120
tatatgtatt cctgcctaaa taaatcatct attaatcatt aaaaaaaaaa aaaaaaaaaa 180
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aagggggggg ggg 233

<210> 121
<211> 2043
<212> DNA
<213> Homo sapiens

<400> 121
ggcacgagca gccctcggcc ccatccctac gaccagccct tccgtcctgc ccaccccggc 60
agcgactggt gttcctgaag acacataaat ccgggagcag ctctgtgctg agcctgcttc 120
accgctatgg ggaccagcac gggctgcgct tcgccctccc tgcccgctac cagtttggct 180
acccaaagct cttccaggcc tctagggtaa aaggctaccg cccacagggt ggaggcaccc 240
agctcccctt ccacatcctc tgtcaccaca tgaggttcaa cctgaaagag gtacttcagg 300
tcatgccttc tgacagcttc ttttttcca ttgtccgaga cccagcggct ctggctcgct 360
ctgccttctc ctactataaa tccacctcat cagccttccg caagtcacca tctttggctg 420
ccttcctggc caatcctcga ggcttctaca ggcctggggc ccgtggggac cactacgctc 480
gcaacttact atggtttgac tttggcctgc cctttccccc agagaagagg gccaagagag 540
ggaatattca tccccccaga gaccccaacc ccccacagct gcaggtcttg ccttctggtg 600
ctggccctcg agcccaaacc ctcaatccca atgccctcat ccatcctgtt tccactgtta 660
ctgatcatcg cagccagata tcaagccctg cctctttcga tttggggtct tcatccttca 720
tccagtgggg tctggcatgg ctggactctg tctttgacct ggtcatggtg gctgagtact 780
tcgatgagtc attggttctg ctggcagatg ccctgtgctg ggtctagat gacgtggtgg 840
gcttcatgca caatgcccag gctggacata agcagggcct cagcactgtc agcaacagtg 900
gactgactgc ggaggaccgg cagctgactg cacgggcccg agcctggaac aacctggact 960
gggctctcta tgtccacttc aaccgcagtc tctgggcacg gatagagaaa tacggccagg 1020
gccggctgca gacagctgtg gccgagctcc gggctcgccg agaggcccta gcgaaacatt 1080
gtctggtagg gggtgaggct tctgacccca aatacatcac tgatcgccgg ttccgcccct 1140
tccagtttgg gtcagctaag gttttgggct atatacttcg gagtggattg agcccccaag 1200
accaagagga atgtgagcgc ctagctaccc ctgagctcca gtacaaggac aagctggatg 1260
ccaagcagtt ccccccctacc gtctcactgc ccctcaagac ttcaaggcca ctctccccat 1320
aaacatcaga ctacagattt aggtggaaga gcagccatgt ttgaagggca catgtgatga 1380
gtgggggca gcaagatgcc atttctgcat ctcccagaag ggatgagtct ttgtcccaaa 1440
tgcaagcccc ctcttcgctg ggctcccagc agtgcttccc tcctccaccc tccactcatt 1500
ttgttctttc cccccaactt tttttttttt ttgaaacgga gtcttgctct gtcccccagg 1560
ctggagtgca gtggcatgat ctcggctcac tgcaacctct gcctcccagg ttcaagcgat 1620
tctcctgcct cagcctccag agtagctagg attacagata cgtgccacca tacccggcta 1680
atttttatat ttttagagac agggattcaa catgttggtt aggctggtct tgaactcctc 1740
acctcaggtg atccacatga ctctgcctcc caaagtgctg ccattacagg cgtgagccac 1800
taggcctgac ctccccttcc cctttcctgc cccaaggcag atccacatca ccgaagctcc 1860
ctagaggggc aaaagatgga gtgagccaca ggaagtttgg ggcgtggtga gttggaatga 1920
tacgtccatt tctctatgaa atatttgcta ctagactgtt catttctctc tgacatgttt 1980
gttgaatgaa taaataattt gaaacttcaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2040
aaa 2043

<210> 122
<211> 2877
<212> DNA
<213> Homo sapiens

<400> 122
tcgacccacg cgtccgggat gaggcccggc ctctcatttc tcctagccct tctgttcttc 60
cttggccaag ctgcagggga tttgggggat gtgggacctc caattcccag ccccggcttc 120
agctctttcc caggtgttga ctccagctcc agcttcagct ccagctccag gtcgggctcc 180
agctccagcc gcagcttagg cagcggaggt tctgtgtccc agttgttttc caatttcacc 240
ggctccgtgg atgaccgtgg gacctgccag tgctctgttt ccctgccaga caccaccttt 300
cccgtggaca gagtggaacg cttggaattc acagctcatg ttctttctca gaagtttgag 360
aaagaacttt ccaaagtgag ggaatatgtc caattaatta gtgtgtatga aaagaaactg 420
ttaaacctaa ctgtccgaat tgacatcatg gagaaggata ccatttctta cactgaactg 480
gacttcgagc tgatcaaggt agaagtgaag gagatggaaa aactggtcat acagctgaag 540
gagagttttg gtggaagctc agaaattgtt gaccagctgg aggtggagat aagaaatatg 600
actctcttgg tagagaagct tgagacacta gacaaaaaca atgtccttgc cattcgccga 660
gaaatcgtgg ctctgaagac caagctgaaa gatgtgaggc ctctaaagat caaaacaccc 720
ctgtcgtcca ccctcctccc actccaggga ctgtggtcat ggtggtgtgg tgaacatcag 780
caaaccgtct gtggttcagc tcaactggag agggttttct tatctatatg gtgcttgggg 840
tagggattac tctccccagc atccaaacaa aggactgtat tgggtggcgc cattgaatac 900
agatgggaga ctgttggagt attatagact gtacaacaca ctggatgatt tgctattgta 960
tataaatgct cgagagttgc ggatcaccta tggccaaggt agtggtacag cagtttacaa 1020
caacaacatg tacgtcaaca tgtacaacac cgggaatatt gccagagtta acctgaccac 1080
caacacgatt gctgtaactc aaactctccc taatgctgcc tataataacc gcttttaata 1140
tgctaatgtt gcttggcaag atattgaact ttctgtggat gagaatggat tgtgggttat 1200
ttattcaact gaagccagca ctggtaacat ggtgattagt aaactcaatg acaccacact 1260
tcaggtgctt aaacacttgg tataccaggc agtataaacc atctgcttct aacgccttca 1320
tggtatgtgg ggttctgtat gccacccgta ctatgaacac cagaacagaa gagatttttt 1380
actattatga cacaaacaca gggaaagagg gcaaactaga cattgtaatg cataagatgc 1440
aggaaaaagt gcagagcatt aactataacc cttttgacca gaaactttat gtctataacg 1500
atggttacct tctgaattat gatctttctg tcttgcagaa gccccagtaa gctgtttagg 1560
agttagggtg aaagagaaaa tgtttgttga aaaaatagtc ttctccactt acttagatat 1620
ctgcaggggt gtctaaaagt gtgttcattt tgcagcaatg tttaggtgca tagttctacc 1680
acactagaga tctaggacat ttgtcttgat ttggtgagtt ctcttgggaa tcatctgcct 1740
cttcaggcgc attttgcaat aaagtctgtc tagggtggga ttgtcagagg tctaggggca 1800
ctgtggggct agtgaagcct actgtgagga ggcttcacta gaagccttaa attaggaatt 1860
aaggaactta aaactcagta tggcgtctag ggattctttg tacaggaaat attgcccaat 1920
gactagtcct catccatgta gcaccactaa ttcttccatg cctggaagaa acctggggac 1980
ttagttaggt agattaatat ctggagctcc tcgagggacc aaatctccaa cttttttttc 2040
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atatattcta catctgtaaa gtgctgagtt ttatggagag aggccttttt atgcattaaa 2160
ttgtacatgg caaataaatc ccagaaggat ctgtagatga ggcacctgct ttttcttttc 2220
tctcattgtc caccttacta aaagtcagta gaatcttcta cctcataact tccttccaaa 2280
ggcagctcag aagattagaa ccagacttac taaccaattc cacccccac caacccccctt 2340
ctactgccta ctttaaaaaa attaatagtt ttctatggaa ctgatctaag attagaaaaa 2400
ttaattttct ttaatttcat tatgaacttt tatttacatg actctaagac tataagaaaa 2460
tctgatggca gtgacaaagt gctagcattt attgttatct aataaagacc ttggagcata 2520
tgtgcaactt atgagtgtat cagttgttgc atgtaatttt tgcctttgtt taagcctgga 2580
acttgtaaga aaatgaaaat ttaatttttt tttctaggac gagctataga aaagctattg 2640
agagtatcta gttaatcagt gcagtagttg gaaaccttgc tggtgtatgt gatgtgcttc 2700
tgtgcttttg aatgacttta tcatctagtc tttgtctatt tttcctttga tgttcaagtc 2760
ctagtctata ggattggcag tttaaatgct ttactccccc ttttaaaata aatgattaaa 2820
atgtgctttg aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaa 2877

<210> 123
<211> 681
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (101)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (223)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (224)
<223> n equals a,t,g, or c

<400> 123
ctccctctcc cttttgctgc aagactggat ctgctcttga atctgccccg gataattctg 60
ggcagcttct tcgatcaagc tgacattatg ggatttgtgg nccttggatt cacgacacac 120
aaaacagagg aacttcccat catcctcgca gaaatagtgg aacatctcct ggtgcctcgg 180
gcaatgtagc ctcttttcct tttggactgc acctcagagg ctnngtagag ctttggattt 240
tctccaccag attccgcaac agcgagttga acctgattgc gttcttcctt acggaagttt 300
tgcagagggg acatttgaaa aatccacatg atgtttcccc aatctgagtg atgcatttga 360
ggcagaaatt gtgcccacag tcgatggtga caggtttctg cagaatgtcc aggcagatgg 420
ggcagatcac ttcctcttgc agtttgttca caaactgccc actggccatg acagaacaac 480
agggctgttt caagactgta ggaagctgtg ccaagtctgt aggagccccg gagtccactg 540
tggatactgt ttctaggaag ggagaaggga gtcagagaaa gtggaggtca gagattctgc 600
ccaattagtt agaagagcag agagagagga aaagaagagg gagaaaaaaa taaagaaatg 660
atagaaaagc gtaaaattta g 681

<210> 124
<211> 606
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (34)
<223> n equals a,t,g, or c

<400> 124
ttgatggcca tttggaagta aatttccgca gtanttcata ggtgcactta acacagactt 60
tgcttaatga aaatgtcagt tctaatagta actgattcac ttctgaacag aagtgatttt 120
aggcatattt cttaacatat atcaagcaaa gtcctgttaa aagatctaaa tgaagaatgg 180
agacctcagt gattaaagat attttgtttc tgaccttgag cagattgctt acctgttctc 240
tagactataa cccaacatgt aaaaaaaatt tgaagatggt gatgaggaaa gtgagatata 300
tatatatata tgtattaygt ttctagcact tttccctttt aaaaagtgaa aatatccttg 360

tacattttttg aaaaatatat ttycagtyct gaaaaatgta gcagaagtag tgaaaatgyc 420
atattttaaa tgttgattat tagataaatt taacctgctt agggtttatt gtaactacac 480
ctttcagacg tgtgtttygg agtagtggaa ttgccagcca ggccctgtgg cttggaaagg 540
catcccagaa atcctcggcc agaaggtgtg gcttgttaaa gcattgagat tcmgagtatt 600
ttggtt 606

<210> 125
<211> 1211
<212> DNA
<213> Homo sapiens

<400> 125
aattcggcac gagagcggcc ttcctcggtc aagtcgctgc gctccgagcg tctgatccgt 60
acctcgctgg acctggagtt agacctgcag gcgacaagaa cctggcacag ccaaytgacc 120
caggagatct cggtgctgaa ggagctcaag gagcagctgg aacaagccaa gagccacggg 180
gagaaggagc tgccacagtg gttgcgtgag gacgagcgtt tccgcctgct gctgaggatg 240
ctggagaagc ggatggaccg agcggacaca agggtgagct tcagacagac aagatgatga 300
gggcagctgc caaggatgtg cacaggctcc gaggccagag ctgtaaggaa cccccagaag 360
ttcagtcttt cagggagaag atggcatttt tcacccggcc tcggatgaat atcccagctc 420
tctctgcaga tgacgtctaa tcgccagaaa agtatttcct ttgttccact gaccaggctg 480
tgaacattga ctgtggctaa agttatttat gtggtgttat atgaaggtac tgagtcacaa 540
gtcctctagt gctcttgttg gtttgaagat gaaccgactt tttagtttgg gtcctactgt 600
tgttattaaa aacagaacaa aaacaaaaca cacacacaca caaaaacaga aacaaaaaaa 660
accagcatta aaataataag attgtatagt ttgtatattt aggagtgtat ttttgggaaa 720
gaaaatttaa atgaactaaa gcagtattga gttgctgctc ttcttaaaat cgtttagatt 780
ttttttggtt tgtacagctc cacctttttag aggtcttact gcaataagaa gtaatgcctg 840
ggggacggta atcctaatag gacgtcccgc acttgtcaca gtacagctaa tttttcctag 900
ttaacatatt ttgtacaata ttaaaaaaat gcacagaaac cattgggggg gattcagagg 960
tgcatccacg gatcttcttg agctgtgacg tgtttttatg tggctgccca acgtggagcg 1020
ggcagtgtga taggctgggt gggctaagca gcctagtcta tgtgggtgac aggccacgct 1080
ggtctcagat gcccagtgaa gccactaaca tgagtgaggg gagggctgtg gggaactcca 1140
ttcagtttta tctccatcaa taaagtggcc tttcaaaaag aaaaaaaaaa aaaaaaaaaa 1200
aaaaaaaaaa a 1211

<210> 126
<211> 881
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (16)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (34)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (37)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (41)
<223> n equals a,t,g, or c

<400> 126
tatgatncct cgctcngttt ctgaaatttt cacnttncac naggtttcaa catataaact 60
ttcaggggac acagacattc agactatagc accaagctgt agaagctaca tagttgtaga 120
ccagggtcag caacccaaga agcctgactt ccaagctgtg cttttaactt ccccaccatg 180
ttgcacctaa agctttggag ttttcctgtg attagtgttt ttggtgttgt tttatttttt 240
ttcttacagg aactcttgca agaagaaagg actatgrgkt cmactttaga gggasccatg 300
gggmctaaac maaattctka ggccccctca accatctaaa tggacttcct tctgggccag 360
gacactcgaa aattaaacct gaaagactgg ttcaggccat gatgggaagt gggagtcgaa 420
catgcctcat cataccctcc agcattaaca tcaacacaga ccttaaggct gataagaagc 480
atttacaatc tattctctct gaagtcttct acctggaggc ttcatctgca tgataaaact 540
ttggtctcca caacctctta caacccaggc attcctttct atcgataatt actctttcaa 600
ccaattgcca atcagaaaat tgttatatct acctataatc tagaagcccc cacatcaagt 660
tgttttgcct ttctggacag gaccaatgta tatcttaaat gtatttgatt gatctctcat 720
gtctccctaa aatgtataaa accacgctgt tccccgacca cctggagcac atgttctcag 780
ggtctcctga gggctgtgtc acaggccatg ttcacttaca tttggctcag aataaatctc 840
ttcaaatatt ttaaaaaaaa aaaaaaaaaa aaaaaactcg a 881

<210> 127
<211> 917
<212> DNA
<213> Homo sapiens

<400> 127
ccatcttcac attttgcttc catatttgaa gagtctcacg tgccagtaat tgaagaatct 60
ttgagagttc agatatgtga aaaggcagaa gaattaaagg acattgtgcc tgaaaagaaa 120
agcactttaa atgaaaatca gcctgagata aagcatcagt ctcttctcca gaaaaatgtg 180
agtaagaggg atccacccag cagtcatggg cacagtaaca agaaaaatct attaaaagta 240
gaaaatggtg ttacacgaag aggtagatcg gttagtccca aaaagccagc cagtcaacat 300
tcagaggaac atttggataa gattcctagt cctctaaaaa ataaccccaa aagaagaccc 360
agagatcaat ccctcagccc cagcaaaggg gaaaataaaa gttgtcaggt cagcaccagg 420
gcaggctctg gacaagatca gtgcagaaaa agcagagtcg tcgccagccc aaaaaagcag 480
caaaaaattg aaggaagcaa agctccatca aatgctgagg ccaaattatt agagggtaag 540
agtcgaagaa tagcaggcta tacgggcagt aatgctgagc agatcccaga tgggaaggaa 600
aaatcagacg tcatcaggaa agatgcaaag cagaatcagt tggaaaaaag cagaacaagg 660
tctccagaga aaaaaatcaa aagaatggtt gagaaatctc ttccatccaa aatgactaat 720
aagactacaa gtaaagaagt atctgaaaat gaaaaaggaa agaaagtaac cacaggagaa 780
acaagttcta gtaacgataa aataggagaa aatgtccagc tatcagaaaa gaggctgaag 840
caagaacctg aagagaaggt agtttcaaac aaaacagaag atcacaaagg gaaagaacta 900

gaggcagctg tacaaaa 917

<210> 128
<211> 1287
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1142)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1233)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1265)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1271)
<223> n equals a,t,g, or c

<400> 128
tttaaaaacc cctggaggtt ttaaccttgt gatgccttta tgaatatcct gttgaaatat 60
ccttccccct atgccttata aaccagagaa agccctttga agccttataa tgccaatgga 120
agatacttag aagtaaacaa aatagagagg tatatgtaga ttttcttagg tcattagttt 180
gtgtctttgt ctggtaggct gaaactactg tcatatgact ctctccctgg ccagatttta 240
atagtcatac taatactgat gtgaatcctg ataattaaac tatcttgtca ttacatttgt 300
agataaagtt ttggttagaa atgattttgt atgtgttagg tatggtaata cagtctcaaa 360
taaaaggtca tgttaagata aaaggtcatg cttacttttt aattaatttg tgtaataaaa 420
tttaggtctt tggaaaactt atttttcaaa taaatgaacc tttcaaataa aaaagagaat 480
tagtttaacc tttatctcat ttcctattat aggggtattg aatggacaag tttgactagt 540
tttctttctt ttgctacctc aacaccaaac aatatgggat tagtgagaaa tgaacttcaa 600
ctggttgatc ttccaacagg tttgttttta aagatccaaa taggtttgtc atattgaata 660
aacatgttgc catttataaa acatgtttga aagtacttct ttcaccttgg aatttttttt 720
tatatttcat gcttatatat ttatyctttt attctctaat aattgcccta gaaaggcctc 780
atcattgttt acatggaaat gttgttggca caaatacatg gtaaaatgga ggaccattag 840
cctgaamaga cagattcatt aaaaaatagg ataccggttc tacttttaag tgcattgtta 900
tatgtaacca actttaaaag atcgatttaa aaataactct gtcaatggac tttattagag 960
tctgtgctgg aaattttggc ttttatagga aacacttaga aaatttatag gttaaggatt 1020
gtttttaaat gctcaaattt aaaacttgta atagtctctg gcygaatgga atagagaaac 1080
ttaatttggg attttgaaga ttctacagta ggaaacgtcc ccaataaggk aacttttca 1140
gnaattggaa agcctaaacc ccagtgaatt tccaaaataa rgaatttgga aaattataaa 1200
gggraagrgg ttccaaatta ttttcctggg ggnatgcagg aaggttccaa aagagggttt 1260
ttttnaaaat nacaattgtg atgaggt 1287

<210> 129
<211> 603
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (391)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (517)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (580)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (602)
<223> n equals a,t,g, or c

<400> 129
cgcttgggct tggcgggtat aggttgcagt gagccaagat ggtgccactg cactgcagcc 60
tgggtggctg aacgagactc cgtctcaaaa aaaaaatcta aatctgacat ttgatgctat 120
ttttattaat attggaatgt tctgtcttga actttattca atataatcaa gaataaagat 180
agagtaaacg tcactgattt gtactattaa gagagaaaaa atatgccaca caactaaaca 240
taggtttaaa ttatgaagaa atttagaata gaggtttatt agatttaggg aacactaaga 300
acaaaaaagg aaggagtgat acctgcctga gtggacagct gtaaatcagc tgtaattact 360
gcagttgtwc caatagttgt gartggctcc nagtcmcttt argagtcctt ggaartwctt 420
ggtacacatt tgttggctgt wccttaaagg aartggcaar tccagtttgt tcyctctacc 480
acactaract gccactgaca agtttgggtc tgttggnttc aaaattttgt aagccatttt 540
cacaagtaca aagatacatt ttaaccttgt cttctccaan attactgagt aggaatttta 600
tnt 603

<210> 130
<211> 532
<212> DNA
<213> Homo sapiens

<400> 130
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ataatgtttt tcttttcttt ctttcctttc ttttctttct tttctttact tttttttttc 120
ttttcttttc tttttttttt tttgacaggg tctggctcta tagtccaggt tgagtacagt 180
ggtgtgatca cggctcactg caaccttaac ctctaggctc aagtgaccca cctcagcctc 240
ttgagtagct gggaccacag acacaccacc atggccagat agttttctgt atttttttctt 300
tgtagagaca gggtttcacc atgttgccca ggctggtctc aaactcctga gctcatgtga 360
tctgcctgcc tcggcctccc aaagtgctgg gattacaggc atgagccacc acatgtggcc 420

cattttttct tcataagtga gtttgtagtt tttactttgt tctaattttt tgaggctatg 480
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<210> 131
<211> 776
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (630)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (669)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (769)
<223> n equals a,t,g, or c

<400> 131
aatcctcagc cattttgtga aaatagccaa gaaacttcta gaactcaaca accttcattc 60
tctcatgtct gtggtatcag cattacaaag tgctcccatc ttcaggctga caaaaacctg 120
ggctctttta aatcgaaaag aagactacct ttgagaaatt ggatacctga tgtcgaaaga 180
agrtaattac aagcggacac gggaatatat ccgargcctg aagrtggttc caagtattcc 240
ctatctagga atctatcttc tggrtttaat ctacattgrt tctgcatatc ctgcctcagg 300
agtaatcatg gaaaatgaac aaagatccaa tcagatgaac aatattcttc gaataattgc 360
tgatttacaa gtttcctgca gctatgatca cctcaccacc ctgccccatg tgcagaagta 420
cctgaagtcc gtacgctaca ttgaagagct ccagaagttt gtggaagacg acaactacaa 480
actgtcgctc agaatcgaac caggaagcag ctctccaaga ctagtctctt ccaaggaaga 540
tcttgcaggt ccctctgctg gctccggttc tgcgaggttc agccggaggc acctgtcctg 600
acacatctgt tgctggcagc ctcccccacan ctccagtgcc cagacacagg gaagagccac 660
agcctaggna acaatatgga tgtgttcagt tgagtgttag ttgaggagta aaagtgcgac 720
atttcccttc ggagaaaggc aagggcacct acttggacga cagtgttcnt agagtt 776

<210> 132
<211> 689
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (348)
<223> n equals a,t,g, or c

<400> 132
atcagggacc cttttgatcc aattatagtt attgggcaga tacagtagta ccctattatc 60
agaagaccta gtttcaaatc ctgagtcaat ttctaattca ctgtgtgacc ttgtacaagt 120

cacttaagct ctctgatcat tggttcaaca tctttaatat gaggagagta atgcctatct 180
caattacctc ataaaattat tgcaaagatc aagtgagttg atatgttaca aattatttct 240
aaattataag attctgtata agtggaaggg ttaagtatac tcccatatta ttaaacaccc 300
tacgtatcac tcaggattct atatgactct gagttctcaa tttctagnaa atggtcccat 360
ttttgctttg ttccctacaa ttctacggag tctttttttt ttwaaaggaa gggtgtaggc 420
aaaggtaaat gggagaaaac atggaatcac ataccactct ttggtgctgc taggcaagaa 480
ttttaaactg agtttaggtc accatcgtgg acttaaggtc catatcacct cagggagaca 540
agtagagtgg gaggcatcca aaaggtaggt gattcttctc ccctctagtg aagaatacaa 600
ggtcaattta caaaaaagca ccagcagcaa ataattggaa aattaaattc ataaamcatt 660
tataatagcg tcaaaaaaaa aaaaaaaaa 689

<210> 133
<211> 555
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (36)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (308)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (471)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (484)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (489)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (510)
<223> n equals a,t,g, or c

<400> 133
ttcntgcccg ccccatcctg tgctttggcg taggcnatca ctgaagactt tctatttctc 60
cattagttca ttcatcttgg tagctagact catgacggag ctgctgccac cccagcagat 120
ctgctcgcct tgctgcttct tcacggtctc cacggccttc gcagaggtgt cagcaactgc 180
catgaccact tgcagcagtt ggctgtagga agtcagattc tggtgcgtgg cctggatgat 240
ggggccgcac gggtggaggt cagggcctgg gcgctggcag cactcgccca gctcgtcgtc 300
gtagattngg agaaaagcca agattagctg gtggaagtcg gaagtgacca gacgcagctt 360
ctggtctagg gtgctgatgt cggctgcgcc cgcaaarccc cttgcttcat gctgtgcaaa 420
ktactccgtt tctaaagcgc gtgcaattgg gcagcattct cctggcagtg nctgggcaac 480
ttcngccanc tttttcttct tcttcggaan ttggcaaagg catgggccca atggccatca 540
tcaatctggc ttgtt 555

<210> 134
<211> 790
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (776)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (780)
<223> n equals a,t,g, or c

<400> 134
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taactgaata cttcttatct atactttttt tctatatctt tccatctatc tgtaagtagc 120
ttttcccatg atctgacttg tttatatttc ctattaactg acaaagcatt taaaaacagt 180
taaaaattgt ctcgacaggc attttaaatg tcaagacatt ataaaatact ttagatttat 240
acagcaattg tgaacacctt tgacaaatga acatgtctgt tcagcctttt tggtacccct 300
ttttattttg cttaggtaga tcaaattcta agttgatctt ttctagcagc agggtcagag 360
tctagtgatc gtttttaaaa tggcttagat gctacctttc ttttctgaga actcagtgtg 420
atataatcct tataagatat tgacagctaa ttttatggat tatcctaccg ggacagtgga 480
acctaagtag tttgaagacg araaattgtt ttgattcaka agcaatgggt tcactagtga 540
aaggaaagat cccacgatcg taagtggtaa atgtttatat ttgttgaata actctctgaa 600
aaaaggaaat aaagtagatt agccttggta agaggtggct taagagtggt tttatgaatc 660
taagttttat ttgaaaaatg tgtgaacttg tttaaggtaa atgtgagaat taataaagga 720
attgagaaga aagatatttg atcgtttttt ggaataacat ttacccaatt taagangttn 780
aactactttt 790

<210> 135
<211> 1408
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (116)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1364)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1381)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1393)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1399)
<223> n equals a,t,g, or c

<400> 135
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gaagaaaaat tttgtctgat tatgtgaagg atctttctgt acatgaaaag aagggnaaat 120
aaacttgcaa ttgaatagac tgattatagt agcactgaga cacaaaaaga ttgaccatgt 180
tgccctccag acactcatac aaggtcgtgg acaccaggtt gaaggcggac tatttagggt 240
ggtaaaggaa ttatgattgt tcttgagcca aagtaattta gtttgaatat aatgaaacat 300
accctgtaaa gactgctaga aagtaaaagg attcgtcttc agaggttgta gaaggtgccc 360
ttcttagtta aaaccaaact gggaaaagta atactggata aaatattcag gataaatttt 420
gcctcagcag aatttcaaag ggcagttgtt cctctgtttc attattgaat sttcagaata 480
tagttaaagc caaargctta aaatatgtta aatgtttcac ttataaccat aatcttttta 540
catagagcat actctgcctt cataataact aaatcctctg catgtggtag atgagtacgt 600
ttaggaaata ttgtcagtgc aattaaatgg cctacacttt aaacagtatc ataaaaacaa 660
atccttaaat atattctact tgagtcacaa aagctgaaca acagaaaggt gttttgtttt 720
tgcctttctc acagtgttgt ggtgagaatc agatgagata gtatttkgac taaacacttc 780
tgaaattgta aatatatggt ggcattattg ttcttatgtc ggcttaggag gataccaaag 840
gggaagttaa tggtcacagt gcacttatgt agctttctaa gctactcaat gtgattcttg 900
ttctctttgc tgttcttttt ctcctccccc atggtgtcct tcagagagaa aaggaatgta 960
gataaatgaa tccctgcaga tgtgtcctga catttcaggg agggacaggg tataatgatg 1020
ccatcctgca aaggcagcct gtgtgagaaa aagaaatcaa ataatgtgga ttttaaaatt 1080
acaaaagaca ttcatttgca gtttatgaaa ggaaaatgta gtttggatac aaagctgatt 1140
aaattggatc aagaaatatt agaattaaat gcaaaaaata atccatgcat ttatggtttt 1200
gatttttata tattcccagc tagttgaaaa tggatgattc ccacaagaag cataactcag 1260
cttggttcct gcttaccgga gtatttccac tatggtatat attgatacat tccttccatt 1320
atggtaggtt gtataccaga ggtaccagtt accggtgggg atcntaattg gaattttggc 1380
ncccggggtt ccnggggan ctttacaa                                      1408
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<210> 136
<211> 902
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (814)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (902)
<223> n equals a,t,g, or c

<400> 136
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cttttgctct tacgaacata atggactctt aagaatggaa agggatgaca tttacctatg 120
tgtgctgcct cattcctggt gaagcaactg ctacttgttc tctatgcctc taaaatgatg 180
ctgttttctc tgctaaaggt aaaagaaaag aaaaaatagt tggaaaataa gacatgcaac 240
ttgatgtgct tttgagtaaa tttatgcagc agaaactata caatgaagga agaattctat 300
ggaaattaca aatccaaaac tctatgatga tgtcttccta gggagtagag aaaggcagtg 360
aaatggcagt tagaccaaca gaggcttgaa ggattcaagt acaagtaata ttttgtataa 420
aacatagcag tttaggtccc cataatcctc aaaaatagtc acaaatataa caaagttcat 480
tgttttaggg tttttaaaaa acgtgttgta cctaaggcca tacttactct tctatgctat 540
cactgcaaag ggtgatatg tatgtattat ataaaaaaaa aaacccttaa tgcactgtta 600
tctcctaaat atttagtaaa ttaatactat ttaatttttt taaagatttg tctgtgtaga 660
cactaaaagt attacacaaa atctggactg aaggtgtcct ttttaacaac aatttaaagt 720
actttttata tatgttatgt agtatatcct ttctaaactg cctagtttgt atattcctat 780
aattcctatt tgtgaagtgt acctgttctt gtcncttttt tcagtcattt tctgcacgca 840
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cn 902

<210> 137
<211> 730
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (606)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (647)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (671)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (685)
<223> n equals a,t,g, or c

<400> 137
tacttcagat acactagtaa agcctgctgt attccaacta atgaggacag atatgtaata 60
tatatacatg tatatacgta tgtatgtata tatactatat atataattat actttaagtt 120
cctaaggtac atgtgcagaa tgtgcaggtt tgttaaatag gtatacatgt gccatggtgg 180
tatgctgcac ccatcaaccc atcatctaca ttaggtattt ctcctaatgc tatccctccc 240
ctagccaccc acccccagac aggccccgct gtgtgatgtt cccctccctg tgtccatgtg 300
ttctcattgt tcaactccca cttatgagtg acaacatgcr gtgtttggtt ttctgttcct 360
gtgttagytt gcwgagaatg atggtttcca kcttcatcca tgwccctgca aaggrcatga 420
actmattctt ttttatggct gcatagtatt ccatggtgtk tatgtgccac gttttcttta 480
tccagtctat cattgatggg catttgggtt ggttccaagt ctttgctatt gtaaatagtg 540
ctgcaataaa catacacatg tctttatagt agaatgcaca tgtctttata gtagaatgat 600
ttatantcct ttgggtatat aaccagtaat gggattgctg ggtcaanggg cattctggtt 660
caagatcctc naggattcac cacantgtgt tccacataat ttaagctatt ttacactccc 720
accagcagtg 730

<210> 138
<211> 524
<212> DNA
<213> Homo sapiens

<400> 138
ggcagaggag gccactgtgc ctggtcaaga aatggaactc ttacacactg ctggtgggaa 60
tgtgaaatgg taagccactt cggaaaacag tttgacaatt tcttatgcta aaaatacacc 120
tatcagatra tttagccact tctaggtatt tacttaagaa aaaataaggc atacatccat 180
atgaaractt gtaaataaat gttctcatta tttttatttg aaatagctma aactggaaac 240
aacccaaata tccatcagca agtgaatggr taaacaaatt gtratatttg tatgcaatat 300
aacaccactc agtaatatga aaatgaacta ctgatgtttg caaaacgttg aaattcaaaa 360
taattatgct gagtgacaga atccagacca caaataatac ataatgtwtt attctattta 420
cataaagttt tagaaaaatc caaactaatc ttartttacc aaagccatac caatggtata 480
tggggcttgg ggcagkttaa acsgattatt gaaaaaaaaa attt 524

<210> 139
<211> 869
<212> DNA
<213> Homo sapiens

<400> 139
ctgattcctc ctcacatatg aaaagtgaaa gttgtgagtt gttttcctct tatttaaaca 60
ttggcctatt ataatctgtg ttggttattt ttctcctgta agcatcctga tttttctgta 120
ggaacttttc tttaaatgac acacattgcc acttgtgtag atatttttaa gttctttggc 180
taagtcctct cctaactgcc tgtcctctgg ttaggcccct ccctctccac tagtggtgaa 240
tgcatgtgtc tgtctgatca gcatcactgc acacggaggt ctagtgagcc tcttgctaag 300
tgtcacacac actcttccca aagacgtgat gagttaaagt tgtattctga aatcatgaag 360
ccagagcctg tgccagacct tctgctacct ctcatagaat tgctctgtaa ttctaaattt 420
aaaattagaa gtagagagag ataagccatc gccccttttgc ctctgagaat tggctgctgt 480
ttctaatata attattttct aagatagcca gatagttaga aaaagatttt cattgatgac 540
atatctttaa actttcttgc atcagtattc taaattgagc aaactgaaag attttcatca 600

ggaaaggagc actgtgggaa gagcccagta ttcacatttt ttccccattt ttcagaagcg 660
acatttcata tataggtgcc aaaagtgaat cggggtgcgg agagtgggaa cctttttgaat 720
ttatgattgt cacagagatg gtagaaatta tgatctgact ggaaaacaat cctgtatccc 780
ctcccaaaga atcatgggct ttttttttga attaaaaagc agacaaatag actttctcgg 840
gaaaaaaaaa aaaaaaaaaa cgcggccgc 869

<210> 140
<211> 586
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (439)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (563)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (577)
<223> n equals a,t,g, or c

<400> 140
ggggnaccag cgcgggtgcg cagacgaaag gcgctctttg ccagctgaaa gttcccacgg 60
aaaaactacc atctcccctg cccaccatgg cagacgaaat tgatttcact actggagatg 120
ccggggcttc cagcacttac cctatgcagt gctcggcctt gcgcaaaaac ggcttcgtgg 180
tgctcaaagg acgaccatgc aaaatagtgg agatgtcaac ttccaaaact ggaaagcatg 240
gtcatgccaa ggttcacctt gttggaattg atattttcac gggcaaaaaa tatgaagata 300
tttgtccttc tactcacaac atggatgttc caaatattaa gagaaatgat tatcaactga 360
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ttaaactgcc agaaggtgna actaggcaaa ggaaatagag ggaaaataca atgcaggtgg 480
aagatgtaca ggtgtctgtg catgtgtgca atgagtggaa gaatatggct gtagccataa 540
aaaccctgtc aaataaaacg ggnaacattc aggccangga ccactg 586

<210> 141
<211> 614
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (546)

<223> n equals a,t,g, or c

<400> 141
aaataaaaag gcagtggccc caccacattt ttttcagcat agtagctggc attttgttat 60
cattagccag agtagcttca gcatataagt tattgatgtt ttccaacttc aaaagtgcat 120
tttatcctcc cagtaaattt gataatgatt tgtcacagct ttgtcatctt ttgacttttg 180
cttatgggcc tcacttcgta caactataac atgaaaaagg attgtcctaa agtaagggaa 240
tcagttaatg gtaggatgaa gaaactgtaa aaactcctag aaaaaaaacc tgtgtgcatt 300
tttctggaaa gttttcaaac tgtgtaattc agttttcatt caattatata atttggttat 360
atgctttaaa aaacatttgt ctaaatgttc ccggttttct tctggtctta gagtcagctg 420
agtgctggct atgcagccac tcgtattttt gcatccagaa aggagtaact ccctttatat 480
gaagrttttt tttttaagct tagatgctat gtaaggagaa aactatttgt aatcacatag 540
tacccngggr ggggagtgrt ggatgctttt ttaaaaaagg rtatttaagt atattatgta 600
atttaaatat aaat 614

<210> 142
<211> 574
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (522)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (574)
<223> n equals a,t,g, or c

<400> 142
ntgttaagtt ctgacattng gagaaaatac attacaaaga acaggagctg gtttttggtt 60
ttccttgtgg ctgtgttttt gaattgaagg gatgtgggat ggtggtgaca gaagtctgag 120
catagtttct gaataattgg aggggagatg ggcattcttt gggactatgt ccgcattaca 180
ttgagttttc tccctctagg aagagagagt ttgtgtttta ttttctgtaa gtaaaagcta 240
catgtttagg atttttaaac catattaatt gttatatttt gtatttcata attatattat 300
gtgttagtgt gtactggaat aacatgtttt atttggttag ttggtgcaaa agttttctaa 360
atctactgct gtattagaaa ctgaaaaggg agggaaattc cagatgtttg atgggaacat 420
cactggtgaa tatctaggrt tggtaagtag acycaaggtt gaagragtaa ggtggggtta 480
acccttaata ttaccttkgg tatatgcccg tttttagcac cngaatcacg gggtcctttt 540
gttccccaac cttaacagca gcccctgtct ggtn 574

<210> 143
<211> 2012
<212> DNA
<213> Homo sapiens

<400> 143
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tcaaagaaat ctgccaacat gtatgtggac tcttgagagg tgggctttcc cagtacatgc 180
taaacagact tgttatgcca agaggaagtg aatagaaatg atagcatcaa atatccaaac 240
tgacaggaag tttcttttgc atagcataga acatggttgt cttctgagtt ccactaatgt 300
tccaggatat cttggccctc tgcctctggc tgctccctgg tgtttggcac catagcgttg 360
tcacttacaa ccattgcctt gggacacaca gagtgaactg tttgagtgat aagtaattta 420
ggtagaaact ttacccttaa tttcaaatga taccaaacag ctcattacta ccccaaggga 480
cgctctccgt agcttctgga ttccccagtt tccttctaga aacaaggact ccaatagcac 540
tataacccta aacaggccct aacccagaag aatacaccac aaaatgcgat tgattttctc 600
aaaatatcac agtcttagac actatacaaa taattcaaga aaattctttc taccctgcag 660
tggatatagt attctattat attctccagc aaaactttta ggacttttca aactcatttc 720
taagccaaat agtttagata aatatttacc cttatatttg gggggaattc aggctcacca 780
tttgccgagg caagcccatc aacagtctag aggcatattc tgtgtcattc cttcccgtct 840
ccttcataga atactacttt ttccttttgt ctcctggcca ttctccatca tctgctgatt 900
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ccaatacact cttatcacag tggttattgc ttcttactct tttcaaatgc attattctac 1020
ccctcaacct atatccaatc attagaacta tacctgactg gagcccagaa cttgggacca 1080
atacttaatt caaatagcag gggcttgctc acaaacatta agcccaaaaa gaagcacagc 1140
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ttagtttata gcactaataa cacttcagtc gtgaatctac agtctcaata tgataagtct 1260
tagaacatgt tctagaaata gtggtacctt gctgctatta tacttagtaa cttatacccc 1320
aatataataa taagtattaa atacagattg tgtatgcatt ctttgtgtgt atatgccaac 1380
tgtactactt aacctcactg atgagcaatt agaaaaatac acaaattgtc atagtgaaaa 1440
taagtcttgg tcaattcaga tgatacgtga acctgataaa tgctctaata gatatgctat 1500
tttgtcctgt attgcttgtt ttacagtatg gtgcatgttg tttgctaagt aaaatgataa 1560
taataataaa gtataccaat tttaaggtta gaattaaaat tttgcacata tgcttcttga 1620
tattctgaaa tgtattctgt ggcttaatta tcttattcat acacatttca ctttggcttt 1680
ttacccctag gaaataactg tccaagtata tatctcgtct tctttcttgt aactttgatt 1740
aaactgctta cttcaactta caacattgta aagccagaat acctcatttt aacagtgaaa 1800
aaaaatatga tgacctgatg tgttctcttg tatttgattt gaactaccta aataggctta 1860
actgtaataa taaatataca atttggcag gcattttttc ctttgtttgg atgaacattt 1920
tgttattggt ccacttctaa ttttgtctta aagagttata aactcagtgt caataaaaca 1980
tcttgttata taaaaaaaaa aaaaaaaaaa aa 2012

<210> 144
<211> 558
<212> DNA
<213> Homo sapiens

<400> 144
aagtttttc ttaccccatc ctagtgagtt tgaaagtggg cctgaccaga atgtctcttt 60
cccattttgc cccgtttgaa ttaaatataa tgtctactct ttaaaggctg aaggggtggg 120
tgaggggatt gtttctcatt ttgtctccca agtcattttt ctgctgtgaa atatgaccag 180

gcttgtagga agactcatct tggagaaaat gtgaagtaat caaattgctt gagattagtc 240
tcctattgta tattagagcc aaaacacatr ataactttgg caacagggag ttgtctagac 300
tcaattttca gaggtcccat tgtagtgagt taatattgct aatcatgtca atcacttgac 360
akggaagtca gtggcaaatc tttaaagtat gcatttgata ctggcaaata tatactactg 420
atgtttcaca aaagaatctt agaatctgta gaaaacatta attacttcca tgaattattt 480
ctaaagtata actttaaagt tttgattttt ctatttaaat aaaaagcyat kgatgkgttt 540
agcakgtccc caaataga 558

<210> 145
<211> 1026
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (182)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1007)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1014)
<223> n equals a,t,g, or c

<400> 145
gcatttatat cctgttaagc attaatagct aatcactggg acttgaattc tgatggcaga 60
tagtctcttg cttagtgaga tggagttaac tattttttag taggaagtga gaacagctga 120
ttttcatgcc acgtttcata gccccacttt tggtagacta ccaccacgct kcttcgcgta 180
anagtyggca tcttgggaat gaatgcccag ccgctcgtgg gttggtgcaa agaagtataa 240
acatatatca ctaaggaaaa agaaagtttg tcttgccctt ctgacacagt gtgtgcactt 300
caggcaattt ttggaaaata taaaaaattc caawttctgc ctttcagcag catcaattgc 360
taggaacatt tcattcattt ccctgtaata ttaatgttct ttaagcataa tcactaatta 420
taagttgtat cctatttttt tccagcttaa tttctgtggt ttattgaaaa ccaagtataa 480
atgtgactaa aagcattttg ctttgttttt atagttaact ttcytaaggt tatggacatt 540
twataatgta acatttgatt ggcctggcct cttgacaatt cccttctagt tatgcatatc 600
ctccctgttg cccacatttc ttgttttaaa actcagtttc ttgttttcca gttgttgcta 660
tgtataacac ccatcttgaa agagagtata taggaagtta ttcagataac ttttgtagta 720
gtgatattca actatagcag taccttaact catgatgagc ttaggaacat aaaagataat 780
tgttgcttga atagcacccc cagagatact gacctaattg gtctggggtg gagatctggc 840
atggtagttt ttttcaagct ccaatcatcg gccagacagt tgctttatgt aggtttttaa 900
atgccaaagg cagatatgaa gtagatttaa ttaagacttg acttcagcaa tacaggggaa 960
cttaaaatac ttrtttttct ttaaactgca ggagtcactg ttaggtnttg cttnaaaaaa 1020
ttgcat 1026

<210> 146
<211> 521
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (440)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (474)
<223> n equals a,t,g, or c

<400> 146
gggacctggc aagcggcggc tgcagggcag gtccaggggc cacatggctg agggggacgc 60
acggagcgac cagaggcaca atgaggaaat tgaagcaatg gcacccattt atggcgagga 120
gtggtgtgtc attgatgact gtgccaaaat attttgtatt agaattascg acgatwtwga 180
tgaccccmaa tggacacttt gcttgcasgt gatgctgccs aatgaatacc caggtacagc 240
tccacctatc taccagttga atgctccttg gcttaaaggg caagaacgtg cggatttatc 300
aaatagcctt gaggaaatat atattcagaa tatcggtgaa agtattcttt acctgtgggt 360
ggaggaaaat aagagatgtt cttattacaa aaatctccag gtgacagaac caggcccaga 420
tgttaaagga ggaaaactgn aggaggaaga tgttggaatg tggaaggtgg atcnccattt 480
ttagcatgtt cagccgggaa agttcggttt aaaagcattg g 521

<210> 147
<211> 557
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (527)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (543)
<223> n equals a,t,g, or c

<400> 147
ggattaacca ttaaatngat tgaaaaggaa actttgcacg gtatgagctt catacccccca 60
ccaaacaaag tcttgaaggt atttatttta ccaagtatat ttttaaagtt gttttataag 120
agagactttg tagaagtgcc tagattttgc cagacttcat ccagcttgac aagattgaga 180
ggcccatgcc aacagtctaa tctaagagat tagtctttca aactcaccat ccagttgcct 240
gttacagaat aactcttctt aactaaaaac ctagtcaaac aaggaagctg taggtgagga 300
gatctgtata atattctaat ttaagtaagt ttgagtttag tcactgcaaa tttgactgtg 360
actttaatct aaattactat gtaaacaaaa agtagatagt ttcacttttt aaaaaatcca 420

ttactgtttt gcatttcaaa agttggatta aagggttgta actgactaca gcatggaaaa 480
aaatrgttct tttaattctt tcacctttaa agcatatttt atgtctncaa aagtattaaa 540
aancttttaa tacaagt 557

<210> 148
<211> 1023
<212> DNA
<213> Homo sapiens

<400> 148
ggcacgagga accaccttct gtaggacagt caccaggcca gatccagaag gcttgaggcc 60
ctgtggtccc catccttggg agaagtcagc tccagcacca tgaagggcat cctcgttgct 120
ggtatcactg cagtgcttgt tgcagctgta gaatctctga gctgcgtgca gtgtaattca 180
tgggaaaaat cctgtgtcaa cagcattgcc tctgaatgtc cctcacatgc caacaccagc 240
tgtatcagct cctcagccag ctcctctcta gagacaccag tcagattata ccagaatatg 300
ttctgctcag cggagaactg cagtgaggag acacacatta cagccttcac tgtccacgtg 360
tctgctgaag aacactttca ttttgtaagc cagtgctgcc aaggaaagga atgcagcaac 420
accagcgatg ccctggaccc tcccctgaag aacgtgtcca gcaacgcaga gtgccctgct 480
tgttatgaat ctaatggaac ttcctgtcat gggaagccct ggaaatgcta tgaagaagaa 540
cagtgtgtct ttctagttgc agaacttaag aatgacattg agtctaagag tctcgtgctg 600
aaaggctgtt ccaacgtcag taacgccacc tgtcagttcc tgtctggtga aaacaagact 660
cttggaggag tcatctttcg aaagtttgag tgtgcaaatg taaacagctt aacccccacg 720
tctgcaccaa ccacttccca caacgtgggc tccaaagctt ccctctacct cttggccctt 780
gccagcctcc ttcttcgggg actgctgccc tgaggtcctg ggctgcactt ttgcccagca 840
ccccatttct gcttctctga ggtccagagc atcccctgcg gtgctgacac cctctttccc 900
tgctctgccc cgtttaactg cccagtaagt gggagtcaca ggtctccagg caatgccgac 960
agctgccttg ttcttcatta ttaaagcact ggttcattca ctgaaaaaaa aaaaaaaaaa 1020
aaa 1023

<210> 149
<211> 1256
<212> DNA
<213> Homo sapiens

<400> 149
gctcagcctc ccaaagtgct ggtattacag atgtgagcca ccgcacccag cctgagtttc 60
tctttctctc tttttaactt tattttttga aaaacccggt agactttgtg gggagcattt 120
ttgttgataa tttactgatc taaagctgag tgattttta aaagaatttg aatctaatag 180
atctgtggtt gaatttsctg tgttgttatg aagtccaccc tgtgggcaca ataacataac 240
tgttggtagg agttgtttga gctattctgg agattatttg gtaaagtata ctaaaagcct 300
taaaaccatg tatgtgcgct gtttgaacca gtaagccact tctttgacat tagaagacat 360
tagaagaaat aatcagcctt gcataaaact tatggatgaa agtattcatc acaatattat 420
ttataataaa aaattgcaaa tgttataaat gaacaattgg gaaatggtta aagaagtgat 480
ggtgcattgt gtggtagaat attatgcata tgtttaaaga atcatatttt ctaagattat 540
ttggaagcat gtttggtaat gtcaagtgga gtaccccaga tacattttag acatttatcg 600
tcatcatctg ctctgagtgg aaggccgttc agagaggcta gaggttctta ttctggctat 660
aaattatgtg agtaaaattg tgctaaccag ttaaaagtac tgtacaccca tgctcaatat 720
atagtcctgg aaatagcaat tgaaacatgt cttctcacaa gagaaaatga cagttttaat 780
gatgtatttg atgaatttaa actttaagtc aggtgctgca aattggaaag aagacttgtg 840
gtgttttaag ttgctgtgga cacttttaag aaacttagaa cccatggaac ccttgtttat 900
cgccatgcaa attacaatct tgaatgagtg ttttttaaaa ataaagtatt agaaaaatgt 960

gtagtaaaga tgtaaaatta aaaaatggaa ttctccatta actgtggatt ttactaaata 1020
gaattactgg tgaagcagat ttatccatcg agactatctg gtatgcgtta tgtatgtagt 1080
ctgttgctgc tgaaagatgt ctgtgtgcct gtatcaacat gtgacttcat gtaaagtttc 1140
tttgtgttca cagttcttag caaatgcagt tacaatccat agatagccag cagtggatgt 1200
tactccagga aaatgcagga ttaaaattgt ccttgtgtaa aaaaaaaaaa aaaaaa 1256

<210> 150
<211> 698
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (683)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (692)
<223> n equals a,t,g, or c

<400> 150
cctcgctcaa gccctcagag aagaacattt tcaccctctt catggtggcc acagctgcca 60
tctgcatcct gctcaacytc gtggagytca tctacctggy ragcaagaga tgccacgagt 120
gcctggcagc aaggaaagct caagccatgt gcacaggtca tcacccccac ggtaccacct 180
cttcctgcaa acaagacgac ctcctttcgg gtgacctcat ctttctgggc tcagacagtc 240
atcctcctct cttaccagac cgcccccgag accatgtgaa gaaaaccatc ttgtgagggg 300
ctgcctggac tggtctggca ggttgggcct ggatggggag gctctagcat ctctcatagg 360
tgcaacctga gagtgggggga gctaagccat gaggtagggg caggcaagag agaggattca 420
gacgctctgg gagccagttc ctagtcctca actccagcca cctgccccag ctcgacggca 480
ctgggccagt tccccctctg ctctgcagct cggtttcctt ttctagaatg gaaatagtga 540
ggccaatgcc cagggttgga gggaggaggg cgttcataga agaacacaca tgcgggcacc 600
ttcatcgtgt gtggcccact gtcagaactt aataaaagtc aactcatttg ctggwaaaaa 660
aaaaaaaaaa aaaaaaaaac ccngggggggg gnccggta 698

<210> 151
<211> 1710
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (142)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (208)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (242)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (317)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1644)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1707)
<223> n equals a,t,g, or c

<400> 151
aatttcggcc cgagggtgag ggcagctgga gtgcgttctg ccgaagcttg tggttgcacg 60
cccttcgtct taggggctac cttccgtggt gagtgtgtgc ggtgttgcac ttggggttgc 120
ttctcgctgc gtggccgcac gnggctgaac ccttcccact ccatcccctc cccgcacccg 180
gaccagcccc tgggacgccc tcggacgncc acccgctcca accctgggga agcctcagag 240
tngcagcgaa ggcctyttgc ctttccgcct ctgcgcttgc tgtcatcgcc cacgtgcttt 300
gttgttgttc ggtgcanacc atgtccaagt ctctgaagaa gttggtggag gagagccggg 360
agaagaacca gcccgaggtg gacatgagtg accggggcat ctccaacatg ctggatgtca 420
acggcctctt taccttatcc catatcacac aactggtcct cagccataac aagctaacaa 480
tggtgccacc gaacatcgca gaactgaaga atttggaggt gctcaacttt tttaataacc 540
aaatcgagga gctgcccaca cagatcagta gccttcagaa actcaaacac ctgaaccttg 600
gcatgaacag gctgaacact ttgccacgag gcttcggctc cctgccagct cttgaggttc 660
tggacttgac ktacaacaac ttgagcgaaa attctcttcc tggaaacttc ttctacctga 720
ccaccctgcg tgcactctat ctaagtgaca acgattttga aatcctgccg ccagatattg 780
ggaagctcac aaagttgcag atactcagcc ttagggataa cgacctgatc tcgctgccta 840
aggaaatcgg ggagcttacc cagcttaaag agctccacat tcaggggaac cgcctcaccg 900
ttctgccccc agaactagga aacttggatt taactggcca gaagcaggta ttcaaagcag 960
agaacaatcc ctgggtgacc cccattgcag accagttcca gcttggcgtg tcccatgttt 1020
ttgagtatat ccgttctgag acatacaaat acctctacgg cagacacatg caggccaacc 1080
cagaaccacc gaagaagaat aatgacaaat cgaaaaagat cagccggaaa cccctggcag 1140
ccaagaacag ataaggaagg gattggcatc ggctggcctt ccagcacctt ctctctccaa 1200
cacttcattc tctcttgccc tgtctctcaa ataaacccaa tgctgcgtgt gaggcctttt 1260
ttatttttct tttcactctc tttctaatgc ttcccacctt accttttaga ttcttttgct 1320
aggtgggaga ttgttataag gtctttaaac catttccatt tgtttcttta acattaccaa 1380
aagcagggaa caaagctctt attcaactgc gaattccata gtgggctctg gcttttcttg 1440
aatagatatc acaaggttgc ttattatcaa aagaataatt aaaatcatgt aaccatttaa 1500
atgtcactgt taacactttt cactctttct gttgattcac ctaactcatt attttgcttt 1560
attaaaagtc ttccttcacc accgagatat gctaatttaa cttacaaatg attttaataa 1620
aatcttgagt ttgtaaaaaa aaanaaaaaa aactcgagag tacttctaga acggccgcgg 1680
ggccatcgat tttccaaccg ggtgggnacc 1710

<210> 152

<211> 1121
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (532)
<223> n equals a,t,g, or c

<400> 152
ggcacgaggc agaatggtcc tgccagccac agcagggccc tggtggggat ttgcactggg 60
cactccaatc ctggagagga tgccagggac ggggatgctg aggaagtcag agagcttggt 120
acggttgaag aaaactgagt cttgggcaat ttgtgctaaa actaggtgag ttgccaaacc 180
caaggcatct taccaacagc tggtttgggg gctggtttcc ctggtgttgt gtgttaccta 240
ccctttggct tggcttgacc tctccttgtg agctcacctg agccctccca gggccaggtt 300
cctgacagtg ttggtttttg cacatccact ggaaaggtgt cattaatgac ccagtgttag 360
aatgcaagag gtcaggttat tctagccctc atggctgaag gcccagtcct ggctccacca 420
ctcctccagc cagagggtct ggaccatcca gtgcctgtcc tcgccacagg gcctccaggg 480
agcattcggg tcaawtccat ggacaccctg ggctacaaac caaggctgct gntcatccca 540
catcgtgtgg ggcagtgtcc atcccctgca gctacttggt gacttaacaa ctycaggagc 600
cctgtcagct gccctcctcc acctaaaccc cttcgactct tctgctttga caaagaaaat 660
gacattgggg aggggaggtg ctccgcctcc cagcttttct caaaatagtc ctatagatac 720
tggtaatctg gaaatgaaga agtaattctg tctctgcacc tacttttgca gaatgttcaa 780
ggaagtattc tgtgttagta ttaatgccaa aaagttgttt ttaaaggttt tgtactcagc 840
acatcataca aaccacatta cttctgtcac ttcagggcat cgggactggc tggcgccctt 900
gttatgtgct attttaatca gtgtaacatt ggtcaagttg ttacccatgt atgctgtgtt 960
tatcatgtgt atatcgtcya gaaagtatta aggctttagg tagatgcaac tggcgaacct 1020
tggagaggga atgctgattg tcttgaccaa acccacagcc tgtctcttct cttgtttagt 1080
tacttacggc aataaatcat ctatgagtta gtgcaccgtg a 1121

<210> 153
<211> 445
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (440)
<223> n equals a,t,g, or c

<400> 153
ttttcttgca tctgcccgcg atcttctccc agacctttct gcgagtacga gccaaccggc 60
agacccgact gaatgctcgg attgggaaaa tgaaacggag gaagcaagat gaagggcaga 120
gggaaggctc ctgcatggct gaggatgatg ctgtggacat cgagcatgag aacaacaacc 180
gctttgagga gtatgagtgg tgtggacaga agcggatacg ggccaccact ctcctggaag 240
gtggyttccg aggctctggc ttcatcatgt gcagcggcaa agagaacccg gacagtgatg 300
ctgacttgga tgtggatggg gatgacactc tggagtatgg ggaagccaca atacacagag 360
gctgatgttc atcccctgca caggcgagga gctggttgaa gccaaggaga gagaggcatt 420
tcggggcgca ttcttaaatn gccgg 445

<210> 154

<211> 798
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (638)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (665)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (698)
<223> n equals a,t,g, or c

<400> 154
agctcttaga caggtacaga gaactacaac ttagtacaga aagcaaagta acagaatttc 60
tccatcaaag taaattaaaa tcttttgaaa gtgagcgtgt tcaacttctg caagaggaaa 120
cagcaagaaa tctcacacag tgtcaattgg aatgtgaaaa atatcagaaa aaattggagg 180
ttttaaccaa agaattttat rgtctccaag cctcttctga aaaacgcatt actgaacttc 240
aagcacagaa ctcagagcat caagcaaggc tagacattta tgagaaactg gaaaaagagc 300
ttgatgaaat aataatgcaa actgcagaaa ttgaaaatga agatgaggct gaaagggttc 360
ttttttccta cggctatggt gctaatgttc ccacaacagc caaaagacga ctaaagcaaa 420
gtgttcactt ggcaagaaga gtgcttcaat tagaaaaaca aaactcgctg attttaaaag 480
atctggaaca tcgaaaggac caagtaacac agctttcacm agagcttgac agagccaatt 540
cgctattaaa ccagactcaa cagccttaca ggtatctcat tgaatcagtg cgtcagagag 600
attctaagat tgattcactg acggaatcta ttgcacanct tggagaaagg atgtcagcaa 660
cttanaataa agaaaagtca gctttactac agacggangg aatcaaaatg gcattaggat 720
ttaggaccaa cttctaaatc atccgtgaag gaaatttggc aagcaaatga aaaccagatt 780
cctcggttaa gatgcatt 798

<210> 155
<211> 400
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (74)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (379)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (383)
<223> n equals a,t,g, or c

<400> 155
ggaatctgga agcctgactt tgcccccagg gaagttgggg accgccttcc ctcccttctc 60
cacctctcac tctnggcacc ctctccaatt gcactaaagt agctgttgtg ccagtctgcc 120
ccccacaagg ggggaggtct ctgcttycag tcttcttccc ccgctgcctc cgctmccacc 180
ctggacaatc tccttgtttc ccttgtgttc mtggayagct cagctttgta tgtgtgtttg 240
gggggtgggg gtgggttctg gcttgagtgg gtttggcagg ggtttgggaa gggttagggg 300
aggatggagg atgaagtctc ctacccccctt ctccagctcc aggccacaga agcctgggaa 360
agggagggtg cctactctng gtngctagtg tgtctttgca 400

<210> 156
<211> 1757
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (596)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (647)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (648)
<223> n equals a,t,g, or c

<400> 156
gccagccacc attttatctc tctaaagtct ggtcccagta ttaaacctat tctttagtaa 60
actcatatta ctgttctaaa ttgaagaaat tatttattac tctgtacttc tagactcaaa 120
attctttatc aaagatagtc tcaaagaggt agtacaagtc ctgtttaact gcactttttc 180
acattcacag tgcttcctct gatatctttc cttacatcat tatacactgt tgatatcatt 240
ttactcttct ttctcttcta catttcttaa attttggttc ttttcctgta catgtgtttt 300
agcggggccc ttttctttga actttgtcta attagcctgt acatttttgt ttcttttaag 360
gtagaacaga tcttttttttg tttctccttt taagtctact ggttttaaaa gaggtaaatg 420
tatccataga ccacagtgcc ttgcttttttc ctctgccagc acatggagca cgggattaga 480
tgcacaaacc tatttaggga actattttgg tagatgtttg agtttataca gaaattgcag 540
ctggtatttt attttgctgt acatttactc aacttgtcca ttagtattta actatntcca 600
gagtttgttt aggagtaaga attgacccat tcgttagttt accatanntt ttcctggtat 660
aaaaaggagc cagaaataag ccttattgct aaataattaa ttatgtaagc ccacctaggt 720
cctgcataag atccccctca catacttcac aatatatatg tgtgtgtgtg tgtgtgtgtg 780
tgtgtgtgtg tgtgtgtgtg tgtgtatktg gctaaaaaat tatactgcca aaattactga 840
ttataaatac ttgactacac tgattgatgg gacaaaatga ttaaagtatt ttcagggatc 900
ttattccata tgtcaccacc aaagatttct acagtgttat aaagtatata aatattccaa 960
atttctgtgg ttaaatattt ttttcttttt tttccttttt tagaataaca cagtctgtgc 1020

tttccaaaaa tgcttgaact tttatgttgt taagaaatat ataatgatat cttacattaa 1080
gcatgagtct aatttgtatt aattgggatg gactaaattt tcatttgatt atcaggaaaa 1140
ttaaggagtt atatatttaa aagcaatttt ctgtgttttc ttctttgtaa gttgactcat 1200
ttgtgaagca attaggcaaa ttttgagaag atcattgtta ttgtggtttg cagtatatat 1260
ttcttagtaa atatcactta agattaaatt tttcagaaag aaaattatag ctttttttccc 1320
aaaatatttt taagatttaa tctttttgta gtatgctaca gatttaatta tattaactct 1380
tttttaagac attgaccatg acttaacatt ttgccttcta acacctttta aatctatgta 1440
ctttaatagt taagagaaaa taagtttgca gatttttaat aatctgtttg taaaaggcta 1500
tctctaagcc tagtatgtgg gtaattttac aggtgtgttt tttgataact ttaatataaa 1560
ataaactcat tttatttgtg gcaattcgcg tttctttttt tatgccagag tacatatgtt 1620
ggattccatg aattggtatt acttattatt atgtgttgat taaatatatg cacacactta 1680
ggattacaga tcacagagca aattatgaaa atcataaaca ttctggtatg gtcatccata 1740
ggattatgaa aaagaaa 1757

<210> 157
<211> 1245
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1245)
<223> n equals a,t,g, or c

<400> 157
gaaagccctg aatgttgtac aaagtgtttt gcaaatcaac ttaagcaatt ctacaaacag 60
aggatcagta gctgctaaga aatttaagga catcatacat tatgatccaa cgaagcaaga 120
ccatgccact tacgaaagaa aaagagatga taagccaaaa gaaagtaaag caaaacgaaa 180
aaagaaaagg gaggaagctg agaaactacc tgaggtgtct aaagaaatgt attataatat 240
tgctatggat ctgaaagaaa tattccaaac tacaaaatat accagtgaaa aggaagaggg 300
cacaccctgg aatgaggact gtggtaaaga gaaacctgag gaaatccagg accctgcagc 360
tctgaccagt gacgctgagc agcccagcgg gttcacgttc tcttttttg attcagacac 420
taaagacata aaggaagaga cctacagagt tgaaacagtg aaacctggaa agattgtctg 480
gcaggaagac cctcgtttac aagacagcag ttcagaagar gaagatgtta ctgaagaaac 540
agatcacaga aactccagtc ctggagaagc atcattactt gagaaagaga ccactagatt 600
tttctttttc tctaagaatg atgaacgact tcaaggttct gacttattct ggagaggagt 660
aggaagtaat atgagcagga actcttggga ggccagaaca accaacctgc gtatggattg 720
tcgaaagaaa cataaagacg caaaaaggaa aatgaaacca aaataataaa tgtcagctgg 780
ttttgatact gaatgtgaac aaggctcacc taaggaaact gacccagaaa acagttttag 840
ctgacaaaga agaaatttca gagtgaagga attttaaaaa tctggctgac ggaatatcat 900
tctggttgcc atctttttct gtggaactcc tctgcatttc ttcctaagta attacttcaa 960
aaattaaatt caacttctta taaaggaaga acaagatagt ccttgaaaat actttttgta 1020
tataatctct ttgccctcta tcctgagtaa ctaatggaca tcttctcatg caaggtttay 1080
atgaagcctt tttwaataaa tgagtcaaag cacttgtatt ttccagccta ggctttgtgt 1140
gaattatagg ctatttgaaa ttttatttct gattatgtca aatacacctt ccgattttgt 1200
catttttgtt taaactgata aattacaagt caacattgag ttttn 1245

<210> 158
<211> 379
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (375)
<223> n equals a,t,g, or c

<400> 158
gtgagctgag accatgccac tgtactccag cctgggcaat agagcgagat tctgtctccc 60
aaaaaaaaca aaaaacaaca acaaaacttg ctaccaccca gggattttct gctatttaaa 120
aggtgaattt cttttctggt actaaactgt agctgcttaa cttagtaaag gctgtgtttg 180
gccaggcctg tgccagaggt cacctggagt gctccaccca ctggcaggca agtcctattc 240
ctattcaccc aggatcccca aggctgggct gggatataaa tgttgggata ggaaagaaat 300
atttcctttt tagaggaaag caagaagaaa cattgcctga aagtgattty ctagtcattt 360
ccattagtac agaangtta 379

<210> 159
<211> 474
<212> DNA
<213> Homo sapiens

<400> 159
ctttatcata ttttacaaat gtgtgagtct gctatggatt agaaattaat aagagatttk 60
gccacagata gtttgagaag cccagcactg ccactcaaca aatgctggtg cattcagatg 120
gtgaaatatt ctgcagctat taaaggagtt aaaactgcct ccacttacct ggaggcccat 180
ctgtgacacc tttttaggtt aaaaggaaaa gaaaaacttg cttaggactg aatatgagcg 240
gttgcaattt gtaacaatga tgtatatata catatacatt ttcatgtatt tgtatgaaca 300
taaaagtatt gaaggatatt catcaaactg ctaaaagggt tgcttcagag taacggactc 360
ggagaaggca gattaatttt ctcttaatgg aactctgtat tgtatcactt gtaaaaataa 420
gcatgtgtta tctttatgat aaaaaagtaa aaacctaaaa aaraaaaaaa aaac 474

<210> 160
<211> 1444
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1373)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (1425)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1430)
<223> n equals a,t,g, or c

<400> 160
gggnntagac accttagaga ttcagcagca agccctgcta agagagcagc agaagaggct 60
gaacagaata aaaatgcagg aaggtgccaa agttgactta gatgccatcc caagtgctaa 120
agtacgagag caaagaatgc ccagagatga cactagtgat ttcttgaaaa actcattatt 180
ggaatctgat agtgctttta ttggggctta cggtgagaca tatcctgcca ttgaagatga 240
cgtcctccct ccaccatcac agttgccctc tgcacgggag cgcaggagga acaaatggaa 300
aggactagac attgatagca gtcgtcctaa tgtagcacca gatggtctct ctctaaaatc 360
tatatccagt gtaaatgttg atgagcttag agtgagaaat gaggaacgaa tgcgaagact 420
gaatgaattt cacaataaac ctattaatac agatgatgag agttcactgg ttgaccctga 480
tgacatcatg aaacacatag gggatgacgg atcaaactct gtagcaactg agccctggct 540
ccgccctggc acttcagaaa cgctgaaacg tttcatggca gagcagctga accaggagca 600
gcagcagatt cctggaaaac caggcacttt cacttggcag ggcctgtcga ctgcacatgg 660
ttaaaataaa cctgtactgg acccagtagt gccttttaag gtgaaaggaa tggtaaatct 720
gtacctttaa tatgtcctac ttttggcccc tacctgaaag ttactttttt tccatcatct 780
gtatataaaa ttatttttat catgatgtat attatgtaca taaataaaag gccatgatta 840
ttgatttata taatagaatt gtatagatta tttttgcaca gttttgtcat aaattagggt 900
ggtaatgaac tggattgaac tactatatgt gcattatatt gaattctgct tgtcattaag 960
ataaggtgaa taagtgtctt aaacgtcctg taaaaccgga ctcccctttg ttacatgcac 1020
attttccatt gttacctcga tgcaaaagaa ttcatttagt aggtacatct attgtagctg 1080
tgattattcc agtttctgtg tgatgcaatc aaatgtccta ttaattaatt attatttcat 1140
gtcatttgta gctactgata cagcagaaat gaagggaact gtaattactt gtatttttgt 1200
aagccatacg ttaaatgttt gttacatcat ctttctgctt ctatttttat gccaatgaag 1260
gcatttgtct tgttactaat tacatgatgt aactacttct tgatataaat aaatttttat 1320
tttaattact aaaatctttt taactactat ggagctttct agactagttt tcnagagggt 1380
gaatagaggt ggggacaccc ggggagtcaa ggacagagga gactnggagn cttccttctt 1440
ccca 1444

<210> 161
<211> 449
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (268)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (269)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (368)
<223> n equals a,t,g, or c

<400> 161
aattcggcac gagttggaat gtgagatggt ggttgagagt caggatctct tttaaaagtg 60
atcttgagca agttatttaa actttctaat tatcagtttc tttatctgta aaatggaggt 120
aatgggaata cttacctcaa attgctgaga gaattaaatg aaataattct gcaagatagt 180
tatcacagta aagcagtaaa tgctccattc agggtaccat tactattgac tgccttaaaa 240
atttaatctt ctagccaggt gcgaaaannc atgcttgtaa tctcaacact tttggaggcc 300
gaggtgagat gatcatcttg agcccgagag ttcaaggatt aaccagagta acatagcagg 360
gatcttgnct ctattttttt aaaaaagtca ccttgtaaca ctggtgaatt ggataaggag 420
caattcagat gtagcgaatt ttaataatg 449

<210> 162
<211> 573
<212> DNA
<213> Homo sapiens

<400> 162
cccaccctga aagccctgag ctttctgcta tcaaagaggt tttaaaaaaa tcccatttaa 60
aaaaaatccc ttacctcggt gccttcctct ttttatttag ttccttgagt tgattcagct 120
ctgcaagaat tgaagcagga ctaaatgtct agttgtaaca ccatgattaa ccacttcagc 180
tgacttttct gtccgagctt tgaaaattca gtggtgttag tggttaccca gttagctctc 240
aagttatcag ggtattccag agtggggata tgatttaaat cagccgtgta accatggacc 300
caaaatttac cagaccacaa aacttttcta atactctacc ctcttagaaa aaccaccacc 360
atcaccagac aggtgcgaaa ggatgaaagt gaccatgttt tgtttacggt tttccaggtt 420
taagctgtta ctgtcttcag taagccgtga ttttcattgc tgggcttgtc tgtagatttt 480
aggacccwat gctgcttgag rcaactcatc ttagggtggc aaaaaggcag grtggccggg 540
cgcgtggtca mgsctgtaat cctagcactt ggg 573

<210> 163
<211> 1037
<212> DNA
<213> Homo sapiens

<400> 163
aattcggcac gagctgtctg cgaagtggcc cttgattaca aaaagaagaa acacacctaa 60
acactttatc tccaagttac aaaagtttga ggtgcagagg gaaggccaga tttttttttt 120
aatgaaatta tatagattag atctcagtat ttaaactgtt cctcaatttt gtgaggctgt 180
gttggaaata acccgcctct agtgctgttg gtatgcaagg cagcggtgct taatcaatat 240
ttcctgtgct caccagaggc aaaatgtacc aatatcctga caccattctc tctccattta 300
cttctggtgg ttaccctgac tcttgactct tagaagtgcc cgagatgggg ctaaccttta 360
ttaaacagat cgcatattat gatcttgctg cagccacagt gcagctccac attaactcta 420
cagaccaaac catttgtatc tggcatcact tactaacaca cgacatgcgg cttttctgca 480
tcaactgcta tgacggttaa gaatgtcagt atacaagaag gaatagaaaa ctgatactgt 540
tttaaataat ctgtaatttc aatttttttt ttttttgct gaaatacatt atattgtacg 600
tttgagataa ttctagtaca aagtataata aaactagatg tataataaac cctttaaatc 660
attggtaagt gtacaagtgg tggaactgaa gcatttactg gacaaagtaa tgttactcta 720
atggttactt gctcgtgcgt tgccacactg tgttataatt tgcttcattt ccttgctatt 780

tgatacatag tgtgcatttc tctgtcactg taactattgt aatgacaaat tttcatctta 840
ctgcacaatc aaaatgacat tgataggaat gaactccaga ggctgggcct gaacagggag 900
gtggtcgctc aggcctggtg ctcagtcgta cgacctgtac ctctcaactt ttgccctatc 960
tgttaaatat atgctatgtc attaaatgct tttaaatcta aaaaaaaaaa aaaaaaaaaa 1020
aacggggggg ggcccgg 1037

<210> 164
<211> 921
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (881)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (908)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (913)
<223> n equals a,t,g, or c

<400> 164
cccccccccc ccttgtggac agctgtgtta ataaggccaa ttttctgaga atgtgggaaa 60
gattaaaata tttaactgtt tatctttcac agagtagcag tagctctgat taagcctata 120
ggcaattaaa agtagtttgt ctgtaaaaag agggaaagaa ataagatttc ttaccccatt 180
ttatggactt ttaaaaatta aaaaactgcg cccccgccca ggagctcttt tcttatgaca 240
tataaattat gacatttata ttctttatat gactttatgt tctcttctta tgacatttaa 300
attctttaag tagtttgttg gtccaataaa ctagacgttg tataatctaa attgagccct 360
tgtatatcta aaactgatga gttgtttcta aattgttgat tgtccattta cttgcctttg 420
gtattaagat aatgcaagta aagtttagta agtcattgga taatgaaatg attatgtttc 480
tgaagaccat attatatttt taatttttag aggaatcatg ccatccccca aaaaatcaag 540
aaatatttga attttaaatt ataagttcat ttgttaaaag acatttttac aaatgtctga 600
aaatcttaaa atactttaca tctaccttta agtagtagaa tacagagctg taaatttcca 660
tgcctttttt cctgatatta agttttatag taaaaaagca actagtgatt gcacaaagaa 720
tataaaaatc caytcttttt acaaaggtgt gaatttaaat aacgttattg attggaatat 780
gaaaataaac caatcattta agagcttttt agcaaatgat ccaattctta ctccttttct 840
cccaagattg gaaaagcata atgtttttcc tcctaaagtt nggaatccta gaaaagcccc 900
ggtgagtngg acnaatgttc c 921

<210> 165
<211> 465
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (428)
<223> n equals a,t,g, or c

<400> 165
aattcggcct cacagagatc atcatcttta ccaccttcaa atcgtaaatc aagtactcca 60
aaaaaaactt attctgagaa agccaccgat aaccatgtta atcatagctc ttgccctgaa 120
ccggtgccaa atggagtgaa gaaagtatct gtgagaacag cctgggagaa gaataaatca 180
gttagctatg aacagtgtaa gccggtttca gtcactccac aggggaatga ttttgaatat 240
acagcaaaaa ttcggaccct agctgaaaca gaacgatttt ttgatgaact tacaaaagaa 300
aaggaccaga ttgaggcagc actaagcagg atgccttctc ctggaggacg ratcacttta 360
cagamraggt taaatcagga agccttggaa gatcgtttgg aaggattaat cgagaactgg 420
ggttcagntc gcatgacgct aaagaattcc atgttttgcg cacct 465

<210> 166
<211> 752
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (651)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (662)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (684)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (693)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (700)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (711)
<223> n equals a,t,g, or c

<400> 166
gtggaaactt tttccatcct gttttctctg ctatatctgt cagccccat ytccaccwac 60
atcagagaag acagcatcgt gaagcttctg tggcagcctc ctaaggaagg ggctgccaat 120

ctgtagttgg cagatgctat aggaattgct tacaaatgtc gtctttaaga aaaatgttct 180
tatatttttc ctatgggcaa aatgaaggct tgggtgctca tctaaagctc agccaactcc 240
tgaagcactc tctcagagca tactgctgct gtaatgggct ggcttaatta tcggcagagt 300
gcttgaaaag gctttgcaga cctcccctgc ccccaagact gggtgacttt atatgtactt 360
cattcaaggg taaatcaggg agacgttctc catttatctc ttcgtccttc ctgcctggga 420
aagtgatagc actaaatatt tcccagcagg atggggtagt gtttctcaaa ggaatcaccc 480
tttccctacc ttcagactca ttctttaccc ttccattgst ccagtgctga tggaggccaa 540
agacaacccc agggttttca taggaaattc actggaattg tgcgcaattg tctttgtagt 600
ccttttgcct tttttttttt taaatattta tgttggcaat agcatttgtt ngggtatttt 660
gntttaaaag gcctcactct aagntattac cgnccccttn attggttttt naaagacatg 720
tgggggggata tagtttttaa aaaataaacg ta 752

<210> 167
<211> 1631
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (255)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1620)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1630)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1631)
<223> n equals a,t,g, or c

<400> 167
tccagagatg tttcctgtcc tccccggttc ccacttgctg ytcaataacc ctgccctgga 60
gttcatcaaa tacgtgtgca aggtgctgtm cctggacacc aacatcacaa accaggtgaa 120
taagctgaac cgagacctgc ttcgcctggt ggatgtcggc gagttctccg aggaggccca 180
gttccgagac ccctgccgct cctacgtgct tcctgaggtc atctgccgca gctgtaactt 240
ctgccgcgac ctggnacctg tgtaaagact cttccttctc agaggatggg gcggtcctgc 300
ctcagtggct ctgctccaac tgtcaggcgc cctacgactc ctctgccatc gagatgacgc 360
tggtggaagt tctacagaag aagctgatgg ccttcaccct gcaggacctg gtctgcctga 420
agtgccgcgg ggtgaaggag accagcatgc ctgtgtactg cagctgcgcg ggagacttcg 480
ccctsaccat ccacacccag gtcttcatgg aacagatcgg aatattccgg aacattgccc 540
agcactacgg catgtcgtac ctcctggaga ccctggagtg gctgctgcag aagaacccac 600
agctgggcca ttagccagcc ccgggccccg ggtgcctctg cgtccgtgcc aggcctcctg 660
atgccaaggc cacatccccg tgcttccagt gaccagacca ctgaccaccc tgactgtcca 720
aacctgtgac cccaggccag ggaacgggga ggaaaccaaa gaaaaccatt ttcagggagc 780

tcagacgtca caggagggag cgggagcagg atgtggccct ggcctcgcca gagcacctga 840
agaagcaggc cgtgagcgag gctgcgagtg ccctgggcgc cgtttctcac gcatgaatgc 900
ttttccaggc ctctgttgct tcctgcacca cacctggtgg ggtgggagcg tcctctagtg 960
cccctagttc tttgtcctgc ctcccagagg gaggaaaaag cccctggggg cttctggctc 1020
cctgagattg ggctctgaga cgagacgggt tcccaaggcc ctggtggggc tggagtctca 1080
cctgtttgca tggagaaatg ggctggcccc acagcctcac aggagcagtt tgtgggctgg 1140
tttccccrgg aatccagacc ctaacccgtg agaatctgga ttttggcttg tgagccctgc 1200
ttatttggag ccgggtctag agggaaccct ctatcagcct caggaaaaca agacctctgt 1260
gcacctcact tttggctcac tgcagccctt gtccttcacc tccacacagg accagctgga 1320
agcagaaaga agaaaggcca atttcacagg gcaccaaaca agtatgaaat gtaaatcaga 1380
aatgcagaca ccccagacga gagcctcaca ggagggaggg ggccccacag gctccccagg 1440
aggctcgtgt ctttggccca gagccagcct tagtttgtcc ctgccatcta ctgtctgagg 1500
ccatcgctgc tacactttgt ttttatttgt atttcatact gaagtttcaa maaaaaaaaa 1560
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaan 1620
aaaaaaaaan n 1631

<210> 168
<211> 740
<212> DNA
<213> Homo sapiens

<400> 168
tttttgaatc ggttgtggcg gccgcggcga ggaatggcgg tatttgtgag aggagtcggc 60
gtttgaagag gtggaactcc tagggctttt ttgagagtgc tgatttagaa gaatacaaat 120
catggctgaa aatagtgtat taacatccac tactgggagg actagcttgg cagactcttc 180
catttttgat tctaaagtta ctgagatttc caaggaaaac ttacttattg gatctacttc 240
atatgtagaa gaagagatgc ctcagattga aacaagagtg atattggttc aagaagctgg 300
aaaacaagaa gaacttataa aagccttaaa ggacattaaa gtgggctttg taaagatgga 360
gtcagtggaa gaatttgaag gtttggattc tccggaattt gaaatgtatt tgtagtcacg 420
gactttcagg attctgtctt taatgacctc tacaaggctg attgtagagt tattggacca 480
ccagttgtat taaattgttc acaaaaagga gagcctttgc cattttcatg tcgcccgttg 540
tattgtacaa gtatgatgaa tctagtacta tgctttactg gatttaggaa aaaagaagaa 600
ctagtcaggt tggtgacatt ggtccatcac awgggtggag ttattcgaaa agactttaat 660
tcaaaagkta cmcatttggt ggcaattgta cacaaggaga aaattcaggg ttgctgtgag 720
tctaggtact ccattatgag 740

<210> 169
<211> 2038
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1490)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1508)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1979)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1992)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2010)
<223> n equals a,t,g, or c

<400> 169
tcgacccacg acgtccggcg gcgggaagct ggcggcagcg gtcggtggcg gtggctgagc 60
agaggacccg gcgggcggcc tcgcgggtca ggacacaatg tttgcacgag gactgaagag 120
gaaatgtgtt ggccacgagg aagacgtgga gggagccctg gccggcttga agacagtgtc 180
ctcatacagc ctgcagcggc agtcgctcct ggacatgtct ctggtgaagt tgcagctttg 240
ccacatgctt gtggagccca atctgtgccg ctcagtcctc attgccaaca cggtccggca 300
gatccaagag gagatgacgc aggatgggac gtggcgcaca gtggcacccc aggctgcaga 360
gcgggcgccg ytcgaccgct tggtctccac ggagatcctg tgccgtgcag cgtgggggca 420
agagggggca catcctgctc ctggcttggg ggacggccac acacagggtc cagtttctga 480
cctttgccca gtcacctcag cacaggcacc aaggcacctg cagagcagcg cctgggagat 540
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gctggagact aaaaacccca gctgcatgga agagctgttc tcagacgtgg acagccccta 660
ctacgacctg gacacagtac tgacaggcat gatggggggt gccaggccgg gcccctgcga 720
agggctcgag ggcttggctc cggccacccc rggccctagc tccagctgca agtccgacct 780
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cgccagcggc ccagccttgc tgccctgtct gctgattctg agaaatccca gaacagccca 960
ttaccagtgg ggctgcagcc taggcccgtc ccactcacct ccccccctgtg gagggccagg 1020
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aacccccttga tctgtagtgt catgggtgct gccgcagagg aagttgagct gggggtgcct 1920
gccagccttt ccactcctgc cccgcttcaa cccaaatgct ccctgtttcc caagctttnc 1980
ccaaatttcc tnaaccttta accaaaaagn ggggtttcct ttggggcaaa aaggccat 2038

<210> 170
<211> 522
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (471)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (488)
<223> n equals a,t,g, or c

<400> 170
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ggcacgaggt taatctaagg tgaagcaaac agaaaattgt ggaggttttg ttggtgtgca 60
actgaggaac atggctcaag aaactaatca cagccaagtg cctatgcttt gttccactgg 120
ctgtggattt tatggaaacc ctcgtacaaa tggcatgtgt tcagtatgct ataaagaaca 180
tcttcaaaga cagaatagta gtaatggtag aataagccca cctgcaacct ctgtcagtag 240
tctgtctgaa tctttaccag ttcaatgcac agatggcagt gtgccagaag cccagtcagc 300
attagrctct acatcttcat ctatgcagcc cagccctgtw tcaaatcagt cacttttatc 360
agaatctgta gcatcttctc aattggacag tacatctgtg gacaaagcag tacctgaaac 420
agaagatgtg caggcttcag tatcagacac agcacagcag ccatctgaag ngcaaagcaa 480
gtctcttnaa aaaccgaaac aaaaaaaaga atcgcttgtt tt                   522
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<210> 171
<211> 1666
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (114)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1659)
<223> n equals a,t,g, or c

<400> 171
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gagtccatct tccaccgcgg ccacgagcgc cttccgcatt gccagcgcct gcctggacga 60
gctgagctgc gagttmctgc tggctggggc cggaggggcc ggggcggggg ccgngcccgg 120
gaccgcatct ccccccacgg ggtcggtgcc tggggatcct gtccgcatcc actgcaacat 180
cacggagtca taccctgctg tgccccccat ctggtcggtg gagtctgatg accctaactt 240
ggctgctgtc ttggagaggc tggtggacat aaagaaaggg aatactctgc tattgcagca 300
tctgaagagg atcatctccg acctgtgtaa actctataac ctccctcagc atccagatgt 360
ggagatgctg gatcaaccct tgccagcaga gcagtgcaca caggaagacg tgtcttcaga 420
agatgaagat gaggagatgc ctgaggacac agaagactta gatcactatg aaatgaaaga 480
ggaagagcca gctgagggca agaaatctga agatgatggc attggaaaag aaaacttggc 540
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catcctagag aaaattaaaa agaaccagag gcaagattac ttaaatggtg cagtgtctgg 600
ctcggtgcag gccactgacc ggctgatgaa ggagctcagg gatatatacc gatcacagag 660
tttcaaaggc ggaaactatg cagtcgaact cgtgaatgac agtctgtatg attggaatgt 720
caaactcctc aaagttgacc aggacagcgc tttgcacaac gatctccaga tcctcaaaga 780
gaaagaagga gccgacttca ttctacttaa cttttccttt aaagataact ttccctttga 840
cccaccattt gtcagggttg tgtctccagt cctctctgga gggtatgttc tgggcggagg 900
ggccatctgc atggaacttc tcaccaaaca gggctggagc agtgcctact ccatagagtc 960
agtgatcatg cagatcagtg ccacactggt gaaggggaaa gcacgagtgc agtttggagc 1020
caacaaatct caatacagtc tgacaagagc acagcagtcc tacaagtcct tggtgcagat 1080
ccacgaaaaa aacggctggt acacaccccc aaaagaagac ggctaaccct ggagtatcac 1140
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actcaagact gacttacaga ccaaccaacc accttgctgg aacccttgct agcaggcatt 1380
cttataaaag aaactttcga gcctccttat attgctggaa actcagctgt gctccagact 1440
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cttttttttgg ttacagtgta tgatggatgt gtatgaaaaa aatgtatctt tgggaaaaca 1560
attacagttt gttaatttga aaaaaaactc gtgccgaatt caagcagccc gggggatcca 1620
ctagttctag agcggccgcc accgcggtgg agggccagnt tttgta                1666

&lt;210&gt; 172
&lt;211&gt; 438
&lt;212&gt; DNA
&lt;213&gt; Homo sapiens

&lt;220&gt;
&lt;221&gt; misc feature
&lt;222&gt; (413)
&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;
&lt;221&gt; misc feature
&lt;222&gt; (438)
&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 172
gcggaggagg tgtatgccca gctgcaaaaa atgcttctgg agcaacaaga gaagtgcctg 60
ctgttctcca agcagttcat gcaccagggc aacgtggctg agaccacccg atttgagaag 120
cttgctcagg accgcaagaa acagctggag atcctgcagc tggcccaggc tcagggcctc 180
maccctccca cccaccactt tgagttgaag acattccasa ctgtgaggat cttctcacaa 240
ctcaacagca cagaaatgca tctgatcatt gtccggggaa tgaacctccc agcccctcca 300
ggggtgactc ccgatgacct ggatgctttt gtgcggtttg agtttcacta ccctgactcg 360
gaccaagctc aaaaaagcaa aacagctgtg gtgaacaaca caaactctcc cantttgatc 420
actcttcaac taaactcn                                                438

&lt;210&gt; 173
&lt;211&gt; 2511
&lt;212&gt; DNA
&lt;213&gt; Homo sapiens

&lt;220&gt;
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<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (44)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2456)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2488)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2511)
<223> n equals a,t,g, or c

<400> 173
gtaccattcc cngaccgctt ggcctgtncg attaatccgc cccnatagga attggcccgg 60
gccagattcg gccgagcaag cggaacctct gggaaaagca atctgtggat aaggtcactt 120
cccccactaa ggtttgagac agttccagaa agaacccaag ctcaagacgc aggacgagct 180
cagttgtaga gggctaattc gctctgtttt gtatttatgt tgatttacta aattgggttc 240
attatctttt atttttcaat atcccagtaa acccatgtat attatcacta tatttaataa 300
tcacagtcta gagatgttca tggtaaaagt actgcctttg cacaggagcc tgtttctaaa 360
gaaacccatg ctgtgaaata gagacttttc tactgatcat cataactctg tatctgagca 420
gtgataccaa ccacatctga agtcaacaga agatccaagt ttaaaattgc ctgcggaatg 480
tgtgcagtat ctagaaaaat gaaccgtagt ttttgttttt ttaaatacag aagtcatgtt 540
gtttctgcac tttataataa agcatggaag aaattatctt agtaggcaat tgtaacactt 600
tttgaaagta acccatttca gatttgaaat actgcaataa tggttgtctt taaaaaaaaa 660
aaagaaatgt actgttaagg tattactttt tttcatgctg atgattcata tctaaattac 720
attattatgt tagctgacag tggtactgat tttttaggtt ggttgttttg tggatttctt 780
tagtagtgat agtagcctga accacatttt agataactca attatgtatg tatgtgcata 840
cacatataca aacacactaa tggtagaatg ctttttttatg tgctagacta ttatatttag 900
tagtatgtca ttgtaactag ccaatatcac agcttttgaa aaattaaaaa atcacactat 960
attaatattt catatttgcc aacagaaaca tggcagatag gtatcaatat gttttcaatg 1020
cctgatgacc tataagaaga aagtattgaa aagaagagag attagaactg ttagaaggag 1080
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gaagttcaca ataggtcata aggtctcttc cttttctaaa attgaaagac aagaaattta 1260

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tactttgatc tttatatact ctgaagcatt tcttcaaact tttctacttt tatttgtcat 1440
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tcagtggact taaccaaaat tgtgttagtc tcaattccta ccacactgag ggagcctccc 1740
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cactattaca tatttttcta gaaaatctaa agttcagaag agaatgtatc actgctgact 2160
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<210> 174
<211> 230
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (19)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (227)
<223> n equals a,t,g, or c

<400> 174
tccntcccag tggtacttnt actaaattgt tgtcttgttt ttattttta aataaactga 60
caaatgacaa aatggtgagc ttatgatgtt tacataaaag ttctataagc tgtgtataca 120
gtttttatg taaaatatta aaagactatg atgatgacat ttaaaaaaaa aaaaaaaaaa 180
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaanggg 230

<210> 175
<211> 1191
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (44)
<223> n equals a,t,g, or c

<400> 175
ggcagagcgg cacgagatgt gagccaccat gcctgggtgt ctcnttcatt ctttaggcag 60
ttcattgtca cttccttcca ttggtaaaca tgtaaattat agtcgcatga tttagaattt 120
tactgaccaa agtcataata atagttaaca gtacaaggaa ctattttkgt ataatggttt 180
atttaataca gtatacatta tctttcatat actttgttac aatgttaaaa aaacttcatt 240
tttcataata taggaaataa agttggaaac aactctggtg ggaatacttc agatagagca 300
agaaagcatt cacagcaagg cctataatca gtaagatgtg tgaaaagttg ggtagccaca 360
ggaggtgttc attaaggata tgattccatt tatatagcta tttctattgc ataaccagga 420
cagttttatt gttttgaggt caatgttctt ttaaaatttg attttctgta agaagaggct 480
ttttggccca gaaagcctta cttattttac awcttccagt ttgtccatcc catgagttag 540
agttcgtctt gactctgcaa gctagaatca aagaattatg aaagtaagat catttagatt 600
tgaccaaggg caccattaaa tggtgtcagg ttttaggaag cagacgggtg tataaaaaga 660
aaatgaacaa agatttcact tattggggat caggcataac tggatgcctg gattgtcctg 720
ccacccagct gccaccaata aaatcattca tcactctgca agagggacca gatgcttcca 780
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gcccttttaa ttgcaaagga gaaaaaaatg gagacacttg tgaaaccttg cattctgagt 1140
gctgccacaa ataaattaag gaattccaga atttcttcat ctacttctgc a 1191

<210> 176
<211> 1499
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1462)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1476)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1495)
<223> n equals a,t,g, or c

<400> 176
gccttctccc gcctccctcg gccttagcca tggcgagtag cggcggtgct ggggcggcgg 60

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cggcggccgc ggcggcgaat ctgaatgcgg tgcgggagac catggamggc tgctgaaaat 120
atgacaagct gactttctgg agaaattctg atgagatatg tcaagctctg caagrgggtt 180
tgaagattgc attgtagttg agaatgtaca wtgaaattwc tgcatgcagc agtgtagaaa 240
aattttmctt tttaaaagaa ttataaaacc atagctttat aaatcagtgg aaagtggctt 300
acagagagaa ctatcagatg tgtttacatc acatcttatt cacttttttt aacagctcta 360
atgctttggc attgctatgk tcatatttat gtattcctta tttatagctc tgatagcttt 420
aattttctaa gcagtctgtc tatcagatgt gcacatctgc tgtgccaggt tgaagtatag 480
tggaacccat cagtagtaat gtgtagtagt tatgacttgt tgacatttcc attataaact 540
ttaattttga attgtttatg cattataact gtggatttat attgtattgg gctgaagttg 600
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tgtttttttga aataagagca tggaaaacat ttcttgtaat ctactcttga acaaagaata 720
tttagttttt caaacagttt gttgggcagc taatagtgtg aaccaggtca tttttgtatt 780
gagtaaaaaa atcaaacttt gagaaacttg gattttaaaa gtaatgacaa tgcttaggtt 840
agtattattt gtaatttgaa tcatttacat ctaatgagaa tgttagttga gaatgttttc 900
ttaaagtttt atatcctata aataacggaa taaaaaaatt tgtaaaatga aacaacaaac 960
atgcaaaatt cctatttact tttattacat aaaagtaatt ttagtgctta cctaataaat 1020
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aaaactaaac aatcaaatgt tctatattag gaatctcaag tatggctttt tttaaaaaac 1260
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cattattctt gcctttaaaa ttttaactca tcaaagtgaa gattagaaat aaatttttagg 1380
aaaatgtagg aatagtattg attctgtccc tgtaatagga atctcagtgg ggtttttttg 1440
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<210> 177
<211> 1538
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (50)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (727)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1218)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1487)
<223> n equals a,t,g, or c

<400> 177

tgtaccggga cctgcagccc gtgggctcgg gcgcctacgg cgcggtgtgn tcgtccgtgg 60
acggcgcacc gscgctaagg tggccatcaa gaakctgtat cgkcccttcc agtccgagct 120
gttcgccaag cgcgcctacc gcgagctgcg cctgctcaag cacatgcgcc acgagaacgt 180
gatcggkctg ctggacgtat tcactcctga tgagaccctg gatgacttca cggactttta 240
cctggtgatg ccgttcatgg gcaccgacct gggcaagctc atgaaacatg rgaagctagg 300
cgaggaccgg atccagttcc tcgtgtacca gatgstgaag gggytgaggt atatccacgc 360
tgccggcatc atccacagag acctgaagcc cggyaacctg gctgtgaacg aagactgtga 420
gctgaagatc ctggacttcg gcctggccag gcaggcagac agtgagatga ctgggtacgt 480
ggtgacccgg tggtaccggg ctcccgaggt catcttgaat tggatgcgct acacgcagac 540
ggtggacatc tggtccgtgg gctgcatcat ggcggagatg atcacaggca agacgctgtt 600
caagggcagc gaccacctgg accagctgaa ggagatcatg aaggtgacgg ggacgcctcc 660
ggctgagttt gtgcagcggc tgcagagcga tgaggccaag aactacatga agggcctccc 720
cgaattngka gaagaaggat tttgcctcta tcctgaccaa tgcaagccct ctggctgtga 780
acctcctgga gaagatgctg gtgctggacg cggagcagcg ggtgacggca ggcgaggcgc 840
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aagaggtgct cagcttcaag cctccccggc agctgggggc cagggtctcc aaggagacgc 1020
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<210> 178
<211> 896
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (194)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (825)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (828)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (831)
<223> n equals a,t,g, or c

<400> 178
ggacgcgtgg gctgcacctc accttgtcca cgtaccagcg caatacctgg ggtgacttct 60
tagaggccat actgcctctg gcagtgcagg ctgcaatgga agaaaatgtg gagtttcgga 120
ggggtctgcc ccgagacttc atggattaca tgggggccca gcattcagat tctaaggatc 180
cgggaaaaaa ccgntttcat ggagaaggtg cgggtcttgg ttgcccgcct gggacacttt 240
gctcctgttg atgctgtggc cgaccagcga gccaaagact tcattcacga ttctctgccc 300
cctgttttga ctgataggga gagggcacta agtgtttacg ggcttycaat tcgctgggag 360
gctggagaac ctgtaaacgt gggggcccag ttgacaacag aaacagaagt ccatatgctt 420
caggatggga tagctcggct ggtgggtgag gggggccatt tgtttctcta ttacacagtg 480
gaaaactccc gtgtgtatca tctggaagaa cccaagtgct tggaaatata cccccagcaa 540
gctgatgcca tggaactgtt gcttggttct tatccagagt ttgtgagagt gggggacctg 600
ccctgtgaca gtgtggagga ccagctgtcc ttggcaacca cgttgtatga taaggggctg 660
ctgctcacta agatgcctct agccctaaat tagtttcttg ttgattgctg gaaacaaggc 720
agtagtgatt ctccgctgcc actgctaact tttttttttt tttttttttc cttaaactca 780
agttcttacc ttgataagca tcagtgtgct cacatttacc tttancantg ntcagtgtca 840
caaacctcgg aaggtctcta ggaagaacca tctcatctag gtacaaaagg gaaagg 896

<210> 179
<211> 568
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (67)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (469)
<223> n equals a,t,g, or c

<400> 179
ttatcttaga tttctagtta tttatatatt aactttttgt ttattcagaa tcattttcct 60
gtttgtngga atatttctaa gagccttggg aaaatctcga gtaaaatttt aaatgaaatt 120
tgtatagtgt tctgcctctt tccaaaggta tttctcaaaa ttgggaattg ttttattatt 180
gaagttgaat gacttcaggg gaactctaaa atgcaagatg ggaagcttct gtttggtttt 240
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tgttgtccag tctgctctcc kgatccctaa rgakgtttct tatctaggct gccatttatg 360
tgggtaaaag acaaggtaga aaatactctt ctgtatcttg tatcaagggt taatctaatg 420
tcttcatcac tttgttttga ratattttgg aatgttatcm acaattatna tagatggagc 480
atgtatgtct taggtttggt gttaatgttt aacatgcatt atcttattca atcctcacag 540
cagtcataaa atgtaggtgt tttagagg 568

<210> 180
<211> 428
<212> DNA
<213> Homo sapiens

<220>

<221> misc feature
<222> (405)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (413)
<223> n equals a,t,g, or c

<400> 180
aaacacctat ggaaataatt ttgttttttt ttttttaaaa aggaatgaga tcatgtcctt 60
tgcagggaca tggatgaagc tggaaccatt atcctcagca aactaacaga ggagcaggaa 120
accaaacacc acatgttctc acttgtaagc ggaactgaac aatgagaaca cacggacaca 180
gggatgagat caacacacac tggggcctga tgcaggggcc gtagcgggga gagcatcagg 240
ataactagct aatgcatgtg gggcttaata cctaggtgat aggttgatag gtgcagcaaa 300
ccaccatggg acacgtttac ctatgtaaca aaccgcacat cctgcacttg tatccagaac 360
ttwaaatatt ttaaaaayct ttagagawtm caaaaaaaaa ggttnttcaa tgnttcccca 420
ttaaattg 428

<210> 181
<211> 2901
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<400> 181
agagaaagcn ttccattgaa aggtagatac tttgaggagt aaaaagactt ctttgaatgc 60
tggtaaacac cgcatttatt ttgtgtatgc agtttgattt gcacatgtat aaatggagat 120
gcttttcatt tttgtttgga ctgggtttgt gtcactgctc attacagttt gctttttttgt 180
gtgtttgctg tgcgtttgga gatattagtc agtttcttta gtgatatttg tttccttgat 240
gtgccttttc gtttttcttt ggggtttttg gaatctggat gctgttgaag ggcaatagca 300
gactcctcca gctaagagac aggacatgtt cttgagccac tgtagctgtt gaagctggac 360
accagacgct ccctataacc cccccgccag gccatagcgt gwatgcawgt gcacttccac 420
ccacagagga gggtgtgaag ccttgagaac ctcaagaaag ggctggattc tgccatacct 480
ttgggtctac cttgggactg ctggttgcca acgtgtcaac cagcctgtgt tccctgccac 540
ccacgcactt gctgaggtgt ggctgargca gaatcatgtg aatgggtgca tccaaggagt 600
tcagggccct gcttggagaa gaaatamttt agcatcatga aagggaaaga acgtgcaccc 660
ctttttttgtt tctttagtga atgcaagatt taataaaagt gaataatgag cttccccttt 720
gggagtggag cccagtgcag ctcactgaca gggttgacat cagtatgatg tgttggactg 780
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aaaaattctt gatttaaaaa gaaaagtcta ttttgttaac gacaggctct gttgtatgtg 960
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tggacataaa tagattcatg ctcatttagg aagctgggag tttcgtgaag ctgagggtga 1140
gttcctgtga ttcttgttcg cttcaacaaa aagtgggaga ccaagttttt atagcaaaag 1200
accaaattag ctgtagagtc ttgaatgcag aaaaaaatta ccctagcttt cttagcactt 1260

agggttttgt gaggattcag tgtttagcac agtgcttggc catagtaagc cctagtaaat 1320
gttaaatatt gttattagtg tttcgtaaaa cttgagaaat agagctgagc tcattccctt 1380
cctgttgatt caaaaataat acctacatga aaacatgatt ccaagttgat tgaatgttgt 1440
aggaattact ggtttagagt agcccagttc tcggcctacc ctgctggttg ggatcttact 1500
gtattcttga atgcactggt ttgaaaatat gccagacttc agcccccaag gaaacaaggc 1560
tgcaagaatt tatgaactcc agctggaaaa ggtaaaggtg acctttggct agccacatac 1620
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tgaacttaca cattccccag gcaggtccct ttgccggccc ctacaggctg gggtggcccc 1860
tcctgtcctc agggatcaga ctcccagact ggttagttct gcatgtttcc atcaaattaa 1920
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ggggcaggga ttttggcctc tcagaacagc tcctagaggc tgctcatgac tgaatgtttt 2040
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gattctgttc cgccaaatca gcagtctcgt cctgtggatg cagtgactgg aatttcccat 2280
ctgcaaagca tctctgtagc ccagattttg tggagcctta agacactccc tcaatgccac 2340
cctgacccca cggctggaga accctgtgct tatgtggtgg gcagggccac tgttgatgga 2400
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caggacagcg tgtcaggaac ctcagagcag cttcacatct gccaaagctg agagggagcg 2520
aacttgggaa gcattttgct cattgtccta cccaagtatt aatagcataa tagttgatgc 2580
caaaggagat ggtgacgtcc cttccactgt agttgctgtc acaaccttga cgtctttaag 2640
ctaatggccg tttgcatctg tgtcttcaaa cagatcctgg ttacagccat tttgtgtgat 2700
tcacttcggg ggttaagtaa tgcaggattc tgcaaacaag gtgtcgccgt ccaaatgtac 2760
tgtcctggca tagagagcac tgctttgttt tccactgttg tagagaaaac tagggagaac 2820
tttatttttc aataaacttt tcttgtgtga aaaaaaaaaa aaaaaaactc gagggggtgc 2880
ccgtacccaa ttcgccctat c 2901

<210> 182
<211> 290
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (276)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (286)
<223> n equals a,t,g, or c

<400> 182
taatttaggt gacactatag aaggtacgcc tgcaggtacc ggtccggaat tcccgggtcg 60
acccacgcgt ccgataaaac atgattttgt tttctaccct tcaaggtaaa cattaaaaat 120
aargtggtac ttgtgtwctt gtwcataaaa ccaaaattat akttgggaaa aaaataaatt 180
tatatatgaa aatgtcaaaa tcattttaaa agtattattt tcaaataaaa tggagaagct 240
ggtgaaaarw maaaaaaaaa aaaaaaaaaa aagggngccc cttttngggg 290

<210> 183
<211> 641
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (14)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (43)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (55)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (68)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (80)
<223> n equals a,t,g, or c

<400> 183
gttcaggaaa cccncaaggg ggggggagtc caaacgggat gcnaggggaa gcttnccttt 60
tcccagcnaa tttgtgttcn ggtttgaaaa gacccaccac aaagctttty ctattttctg 120
atttaaaagt cgcttttgaa tatgaccatg agaaaccaag aaatgctgct tgtgtggtgc 180
tctgcttcct gaggatttgg ctggaagggg attctccgct ggcacatggg agaaggccat 240
cttctgtgtc ggtgctgtga tctgccttgt tctcacttgc tgaggataag ggcatacacg 300
ctgctcctcg ctttcttgtt gcccgacttc gtactaagca gctcaggagc agtcactcag 360
acccaaatgt cttgactgtg ttgtttttaa tcactgtgac ccttaaagta caggccaagt 420
gttgtcaaac accttggcta aaacagtgga gggtgatggg taaagcagta gagggccctc 480
aacccacaca ctggctgaaa ctgccaccaa ctgccacgat gaacccaact gctgtttatg 540
cccccatttt ccttttttttg tatctacacc cacacgattc ccaatgttgg atatttctac 600
atgaataaag caaggatcag tgcctcttat gtaaaaaaaa a 641

<210> 184
<211> 522
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (514)

<223> n equals a,t,g, or c

<400> 184
caccacgtgg ctgtgaaaat gacaaagcat ggtcgtgagc cactatgccc ggccggattt 60
gcccttatta atggttattt cttgtgaaag tttctttttg cctttgcatt ccttttattc 120
tgtttattcc cccatgcctc acccaaagag ttgcacggtc aattggcccg tgaaggggac 180
gcctactttc aaacaaggca gacaggacac gacaggacgg cggctcatag cacagacttt 240
ggattgcagt ggatgggacc agatcctggc tccacttcts gcyagctgtg tggccctggg 300
caagctgctt aacctctctg ggcctcagtt tctccccctg taaactgggg gatgtgaaca 360
gcgcctgcct ccgagtccta aggattggga gtagtcgtgt aaagtgctca ggtccacagg 420
ccatcaatac taatagttaa aaattattct tagaatcttg cttccctcag ctccctgaaa 480
ggccactaag gcacccccagt tgcagaggcc aatnggtccg gg 522

<210> 185
<211> 735
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (197)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (293)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (386)
<223> n equals a,t,g, or c

<400> 185
agtataacca tttaggtgcc agatttgata atcaccagck gctcatksar gtcctatgtt 60
gcaaagttac tcttacsctt tttttacatt rcttgataaa ggcaatsttt aattayrtat 120
ttyctrttaa ctagctggta gagttcatac ctaaagtcag taaataatgt taagaatttt 180
ttccagctga gcaaatngta tgtatctagt tgtaagaaat caagaagagg atataaaata 240
taatcaggat gtggactcta aaacggaata acctctatgt cctgtaactt ttntcactyg 300
taataataca gcattctcac cctrttaaat ggaaatttar agcaccytta aattccggaa 360
taaaattgct atttggatwg aaaaancccct taggcaacat ttattgaata ttaggaaata 420
acttttatgg gattagaatc catttttttat agaaaccaaa tttaaaagta tacatatttt 480
aatataagtg ttgtgataat acagtaacca aaattgaaca cacagtttta wagcttttta 540
tatttagtag cagttgaata tatatggcat gttttacata gattaatttt actattttttc 600
tttrtttaaa maagagracc aaattgaaag ccracagata ctgcaratga ctgggatttt 660
tgtttctgyc ttatcttttt gtgttttttt tctgaataaa atattcagag gaaatgcttt 720
tacagaaaaa aaaaa 735

<210> 186
<211> 785
<212> DNA

<213> Homo sapiens

<400> 186
aattcggcac gagagcaagc ggaaccaggt atcgtacgtg cggccagccg agccggcgtt 60
tctggcccgc ttcaaggaac gggtcggcta cagggaggga cccaccgtag agactaagag 120
aattcagcct cagcccccag atgaagatgg ggatcacagt gacaaagaag atgaacagcc 180
tcaagtggtg gttttaaaaa agggagacct gtcagttgaa gaagtcatga aaattaaagc 240
agaaataaag gctgccaaag cagatgaaga accaactcca gccgatggaa gaatcatata 300
tcgaaaacca gtcaagcatc cctcagatga aaaatattca ggtttaacag caagctcaaa 360
aaagaagaag ccaaatgaag atgaagtaaa tcaggactcg gtcaaaaaga actcacaaaa 420
acaaattaaa aatagtagcc tcctttcttt tgacaacgaa gatgaaaatg agtaagtgta 480
aatattttga atttagtcta ctttgaaagt atatggagtg ttcattaaaa tcacattttt 540
tcctattata aagatactac aagttcttta tagaaagttt aggaaataga gaaaaaaatt 600
taataaacta catctattca tcaatacccc tctgacttaa aatgccaact ctatagaaat 660
tagctagtat taacattttg ttatttccct tgtgtggttg tatatatatg taaattatat 720
ttttaagcaa aatacatttt ttgtgtgtaa acaaaatttt ataaatacaa ctgtattgca 780
aaaaa 785

<210> 187
<211> 1679
<212> DNA
<213> Homo sapiens

<400> 187
gatctttagg tttttcctat agaaaacatt cttcctccat cagtagccct ttatttgata 60
ttcagaagtg gaaagctttt tcattctcca gtagaacttt taaaaattgt tacagatacc 120
tagctcttca cagatatcat gtattgtaaa cagtcatgtg tcttaatttt attttctcta 180
tttgagtgca taattatcct aataatccca aagacactga caactcaagg aacagcagta 240
cagtactatt agaagttaag tatgttgttg ttatttcaca tttcatttaa ttgtggataa 300
atgttagaca tctgttgaaa taagctcata tggtggaaac gacaactata ttatgaatta 360
ttttcagaaa tggatctttg aatagcagat caggatttaa ataataaaat tatctatgaa 420
tcacttttat ggtcatacat atatgataca aatccagagt tattggtgca gaaatggcta 480
cccgagagct tggtaaattt gccttggttt cttatgttaa atgtattgtg cttcccttct 540
gtctctagaa tgtggctctt cagaagacag acaatcgaca tttaaatttt tccaaacaat 600
gaaaaactaa attaaaaaca ttgcttgata tttcatttaa aattgcacct tgcttaaggt 660
ttactgaata actgaaatgt cagcaattta aaataaattc aattgtgtga taaaatatct 720
cacctataat agaagaaaag gaaaatcata ttatttggca attttgcagc attgtggttg 780
cctaacaggt atatccagca gatgagaaac agtatgaaag gattgtatta acatggtaag 840
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aatacgtttt cttgktttat catctgktct atgattcggc ttcactttgt gtggktattg 960
aattatgtaa cagagatttg gktttcccaa aatgktatca catttgaaac tatgattgct 1020
ttgkgktcag tccttttgga acacgtagct tycagcttaa gggtagagga aatatatacc 1080
taaaatcatc aatacatgaa agaaaaagga tggaaactat gtcctcagtt ttacttctac 1140
caaaacatcc ctgtatgtgt gtgcatgtat gttggcgtgt gtgtgtgtgc atgcatatta 1200
gtaaatgtgt gtttgcatgt gtgtgttggg gagtgtatgt gatctgggtg tttgtttatc 1260
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gttaactttt gctgcaatct attgtacatt tgcaattttc tgtgttagta aacttagcag 1440
aatctggtta wttattttwg tgtaggctta atgttcactg aaagataagt caattactgy 1500
tagtaaaaaa ttaaggtact ctcactgcag agatttaagc ctgggcctaa tgtgctgtat 1560
tatgaagcct tgtgactgaa aaatatgttt acatatgttg tctatttttt taataaactt 1620

ttatagctgg tctatttgct cagtaaaaaa aaaaaaaaaa aaaaaaaaaa aaactcgag 1679

<210> 188
<211> 780
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (289)
<223> n equals a,t,g, or c

<400> 188
cggtgggctc gcgttgaggc tgcggtcatg gagggagcag gagctggatc cggcttccgg 60
aaggagctgg tgagcaggct gctgcacctg cacttcaagg atgacaagac caaagtgagc 120
ggggacgcgc tgcagctcat ggtggagttg ctgaaggtct tcgttgtgga agcagcagtc 180
cgcggcgtgc ggcaggccca ggcagaagac gcgctccgtg tggacgtgga ccagctggag 240
aaggtgcttc gcagctgctc tggacttcta gggatctcag ccgtggckna ggccaccccc 300
agaggagccc ctggtccaca gaagcaggcc ttgtgtttcc agcggcctct gataagaggc 360
agggaaggam ctgaaggatt tggarttgat tcaaacaaga tctctgggag tctccagcct 420
gtgcagaagg ggcaggactg cagtgcactg cgggccttgg agtgtccagt ggggacactg 480
gtgtgggaag gggcagcacc tggggagtcc ctgcctctcc tccctgggac aatagtgtgc 540
atgccacccg gggtcctaca ggcaggtgct gggaaaggcc tggccagcag gtagcctgtg 600
tgtttgacaa acagcagctg gcagcgctgc ctcctgccca cattcctgcc acccgacatc 660
aaagctggcg tgtgaccttt ccagccatgc gatattcccc ttggaagatg cttccccagg 720
ctataaattt gttctcacaa agcaacatca ataaatcaaa actgtctcty ccaaaaaaaa 780

<210> 189
<211> 533
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (485)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (498)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (522)
<223> n equals a,t,g, or c

<400> 189
ggtcccttta aggtttgctt ctacagcccg tggactttag cctaaacacg gacccgcgaa 60
gctggcttta tttgtccatg tctcggacag agcctgggaa gctgccagtg agatttcaga 120
gaccaagagc gcgaaggggc gggcgatgtg gcaatccgtc tgggatgtga aaagcgtgga 180

gcgcatttag aggcattcga cgaaaacaca ggaaatcact cctctcccgc tcctgggcgc 240
cgctgccact ggggcagagg actgggaacc gcggcagcgg gataagtggc ccagccagag 300
agcgcagctc ccgcgcccgg tcctgccctg cgaaccacgc ggccccctgg gctgaagctg 360
ctccggccat ggccctcggc cccgcgcccg cccargggty gctgtcccct gcttgctggg 420
ctcctccctg gtacattgcc tcctcccgga cacaaattac tccctgaaaa aaaggccctt 480
tgttnaacct actgtggnta accgcctttc aaaaactaaa anttgctggg gaa 533

<210> 190
<211> 602
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (548)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (583)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (590)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (600)
<223> n equals a,t,g, or c

<400> 190
tccttaatct tggttttcct taaactttct ataagtccag catctgaaat attttgtcaa 60
ttatcacatt aatgtgttca ttttgtaagt aagagtactc aatttaaaat gatcttactt 120
taaaagtggc ctagtttgca gtgcccagca ggacactgac agtcacagct gtgtgacttt 180
ttgtgggtta cttaattttt ttgagcctcc ttttctcttc tattcaatga ggataatagg 240
gcctacctca taggattatw atgcattccc ctctgttaat gcacgtaaag tttttacttg 300
gaaaactaac tcaccattta acaaccattc taagcaccat agaatatatt ttgtttcaca 360
aatttggtat tcattcagaa taagtatttg aaaagtgagt aaattctatg caattatagt 420
tattaaatga cttataaact gtgtttctct tccacttctt gctacattta atcttctagg 480
tgttcagata tctttggaga ttataggcag caataaagct aaggcagcta acctttaaca 540
ttcttggngt caagctaata ttttggtgaa agggaattct tgnggttctn aaaaaacttn 600
ga 602

<210> 191
<211> 858
<212> DNA
<213> Homo sapiens

<220>

<221> misc feature
<222> (772)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (801)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (814)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (815)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (852)
<223> n equals a,t,g, or c

<400> 191
cttggctcaa acaatatttt ccctataaca aaggcaatag gacacaaaat tcacatcctg 60
ctgggccttt tttcatcaag tcagggtgat ataaaaacat tggaagtctt ttcaccaaac 120
cctgacttta ttgaatgcta gtagaagatg tagaattaga gacatctgat ttgtttatca 180
ccttagcaga aaaaccacag tccaaaagac aagcaaatta agaatggagc ttaaccatgc 240
ctccattggg aagtctagac tttgagccag gtacagtaag aaaaattagc ctctgattca 300
ttaagtttgc cacatgactt attttgatat tttggataca ttaactcact taggagaatt 360
cagaaaagaa tgggtgatta aagttcatta cagctgaata aatgtgtcta aaacagactc 420
ttgtattctg aaagtacagt ctacaactga taaaacctta tgattctttt ctcccccatt 480
atgcccctat atatatcaag atttgggtac tttattttag tagaaaatat atatctttta 540
catatgtatg tatttataaa tgcatagata tatgtataaa aatttgtaag cgttagcggc 600
attaattcac caatgcattt ggacaacttg atgtaactga ctttatttta tgtgactata 660
ataaaaagca taattttctc aaaaaaaaaa aaaaaaaaaa aaaaaagggc ggccgctcta 720
gaggatccaa gcttacgtac gcgtgcatgc gacgtcatag ctcttctata gngtcaccta 780
aattcaattc actggcccgt ngttttacaa cgtnntgact gggaaaaccc tggcgttacc 840
caacttaatc gncttgca 858

<210> 192
<211> 667
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (82)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (234)
<223> n equals a,t,g, or c

<400> 192
gcgggggaag cggggctgta gctgggcagg gagagggcgg acgaaatcgg tagcgatctc 60
ggctgcggcg ctgcccactt gncccggccc gcggggcgcg ccctgaccct tcatctttgg 120
gcaggctcga gggcgcgcgc acggttggcg ttctggggcc tcaaactcct gggccttgac 180
cgggcaggcc gcgtctcccc gggtgtgagt ccaccgggac ccggccgccg cctnaagcgc 240
gkgcgccaca gaagcggcgg cgcccgaaga cgcgctcctg gctcggcccg acagcctcgc 300
ttggccgcca gttcttctgc agccgaaggc ggttgttctt ttaaagaatt attgaagacg 360
aaggtttttt tctttttatt tttttaatgg ytttacagaa tcttaaatag aatacagttt 420
gacatgacgg caaaaaatgt tggtttgact tccacaaatg cagaagtaag aggatttata 480
gatcagaatc tcagtccaac aaaaggcaac atttcatttg ttgcatttcc agtttccaat 540
accaactcac ctacaaagat tttaccaaaa accttaggac caataaatgt gaatgttgga 600
ccccaaatgt gatagaaaac gggctagaaa atttatagac tctgattttt cagaaagtaa 660
acgaagc 667

<210> 193
<211> 537
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (85)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (511)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (537)
<223> n equals a,t,g, or c

<400> 193
gttaccgctc tataccggca gcagccgcgg agagcatgcc ccgcccccgt ggagcccacc 60
ccgggcggtt aacctcgggt ctcantcccg ggctgtgacc ctccccgagg ccccgccccc 120
acggcgaagg cccggggcag ttaacccttc tcttgctgcg gcagagtccg cacccgggca 180
ggcccatctc agaattaacg ctttgatggc atcaccgcgt cgggaatccc tggggatggt 240
gttctccacc gtcaagacct ttgagccgcc tgagcgacta actcctgcgc ccctgagggg 300
acattttatt cagaaattaa atcattcaga gttccagcac tgtcgggggt catcgggctc 360
tgtccaccgc catagcctag cattgtcacc aacggagcca trgagggacc tcggcccaag 420
ctggggcctc ttcattgtcg aaaaggcctc ttgccagacc aggatctgtg ggcgcggcca 480
ggctggagga ctagggcggt ggcagtggca ngtgagtgca catggctgtg ggtggtn 537

<210> 194

<211> 400
<212> DNA
<213> Homo sapiens

<400> 194
tctaactata ttaaaaaatt tctgtatggg gatatcatta ggaagggtat cagtaccttg 60
tctgtwatgt gtctactaag caaaacccaa actgcagcac ccccctgtgg tacactgcac 120
ctccagtttg tactgggggt tgttggccag gctataggca tctttcacag gtccttgctt 180
agcatcccaa gtactgtgaa tacatgttga ttctttaaaa agacctggat tccaactcaa 240
ataaatcaca tcataatact ggcagagatc atcccaggaa atccaaaata ttccgttgtc 300
tattttctga gctgttcggg gatcaaagtt taaatacttt tgcaactctg gagtccagtt 360
ttttacatca ttttcactgt atcttccttt ccaacgtaac 400

<210> 195
<211> 431
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (411)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (417)
<223> n equals a,t,g, or c

<400> 195
cgcgtgggcg gacgcgtggg gtgaattttc agccctcaga gcagaaaatg agaaaataaa 60
actcgaacta catcagttaa aacaacaagt aatggatgaa gtgatcaaag tccgaacaga 120
taccaaatta gacttcaacc tagaaaagag cagagtaaaa gaattgtatt cattgaacga 180
aaagaagctg ctggaattga gaacagaaat agtggcattg catgcccagc aagatcgggc 240
ccttacccag acagacagga agatcgaaac tgaggttgct ggcctcaaaa ccatgcttga 300
gtcacacaag cttgataata ttaaatattt agcagggtct atwtttacst gcytaacagt 360
agctctggga ttttatcgcc tgtggatcta ataaagtgtc tatttaaagg ngaaaanaaa 420
aaaaaaaaag g 431

<210> 196
<211> 417
<212> DNA
<213> Homo sapiens

<400> 196
tttcactttc tactttttc attttgttct gttcgaattt tttataagta tgtattactt 60
ttgtaatcag aatttttaga aagtattttg ctgatttaaa ggcttaggca tgttcaaacg 120
cctgcaaaac tacttatcac tcagctttag tttttctaat ccaagaaggc agggcagtta 180
acctttttgg tgccaatgtg aaatgtaaat gattttatgt ttttcctgct ttgtggatga 240
araatatttc tgagtggtag ttttttgaca ggtagaccat gtcttatctt gtttcaaaat 300
aagtatttct gattttgtaa aatgaaatat aaaatatgtc tcagatcttc caattaatta 360
gtaaggattc atccttaatc cttgctagtt taagcctgcc taagtcactt actaaaa 417

<210> 197
<211> 734
<212> DNA
<213> Homo sapiens

<400> 197
agacatattg aggtgcctgc ccttgtggag tattcatttt atgctgccca agatatcatt 60
taatttagac ttaacaagta tttccttgtg attatattac tctgtccttg ttaataaagt 120
gctgctgtgt ttgactctga acatactacc aaaacttctt caaagagttt tttatgaaag 180
actttcctcc tttacaagar agaaatrggg tgctgccttt ctgtttagta aaagcagaat 240
ttgcagtggc atctaaagag acttttttaa ataaaaatta tgtattgtgg cataatcctt 300
tttttgagct ctacagagaa cagtcttttg gtaatagtgg caggtattta ttccttctga 360
atatataccc cattatagga ataactgtta cttatttagg attccatcat tgaaaatttt 420
gacccaaggc acagcagtga aatttatagt tcycaattta gttgtcatta ttgacaggca 480
ttggtattat tagtcattgc taagcaacta aaacttcatc agttcaaata agttttaatt 540
gtcaaatgaa gtataaacac atgaactttc tagaaatatt tcctcttttg gataggtctt 600
taaccagttc atatatatac tttgtcaaat atatggatgt gtatgtgtac atttataaga 660
accagtatgg atacatccat tcactgtggt acattttaaa ataaaatatt ttagcagtga 720
atatggaaaa aaaa 734

<210> 198
<211> 606
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (144)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (155)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (598)
<223> n equals a,t,g, or c

<400> 198
aggaagctgg gggaccattt tgcaccatga gtttgtgaaa aatctggatt aaaaaattac 60
tcttccagtg ttttctcatg cmaaatttyc tyctarcatg tgataatgag taaactaaaa 120
ctatttycag cttttcctca attnacattt tggtngtata cttcagagtg atgttatcta 180
agtttaagta gtttaagtat gttaaatgtg gatcttttac accacatcac agtgaacaca 240
ctggggagat gtgctttttt ggaaaactca aaggtgctag ctccctgatt caaagaaata 300
tttctcatgt ttgttcattc tagtttatat tttcatttaa aatcctttag gttaagttta 360
agctttttaa aagttagtta aaagaattga gacacaatac taatactgta ggaattggtg 420
aggccttgac ttaaaacttt ctttgtactg tgatttcctt ttgggtgtat tttgctaagt 480
gaaacttgtt aaattttttg ttaactaaat ttttttctta aaataaagac tttttcacaa 540

wraaaaaaaa aaaaaaaaaa actcgagggg gggcccgtac ccaatcgcct gtgatgtntc 600
gtatac 606

<210> 199
<211> 373
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (251)
<223> n equals a,t,g, or c

<400> 199
catcttggag gtcaaataat agtaggaaaa gttcagcaga tactgaattt tctgatgagt 60
gtactactgc agaaagagta ctgatgaaat ctccatctcc agcattacac ccacctcaga 120
agtacaaaga tagaggaatt ttacatccta aacgaggtac tgaggaccga tcagatcagt 180
cttctctgaa atctacagac agcagtagtt acccaagtcc ttgtgctagt ccttctcctc 240
catcctcagg naaagggctc aaaatctcct tcrccaagac caaacatgcc tgttcgatac 300
ttcataatga agagtagcaa tttgagaaac cttgaaattt ctcaacagaa gggtatctgg 360
gctacaacty cta 373

<210> 200
<211> 3652
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (306)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1412)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1519)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2101)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2102)
<223> n equals a,t,g, or c

<400> 200
acgagctgat gtctcccgga ggaatctgca attgcataat ttagttggtt gcttgtctac 60
tgtctctctc tttggcaaga atgaaagctc tatgagcaaa cagaccttgt ctgccttatg 120
atccatttta ttactagagc ctaggactgt taaattcatt aataaagtct ttccatcact 180
ttttgttctt tatattcctt tactcaattg atattcagca tgtgcagaac agttcttttc 240
caaggctgca taaaagtttt ggaatgaggc acataaataa tatccttcta ccaataaatg 300
ctatcngtta taaaatagtt tttattttat aatcactgaa tatgtcaaaa ctttacagtt 360
caggcctttt gaatcaaatg caaaatcaaa tatgaaaagg ttaatgatct tgtccactaa 420
aattgtagtt tgccatacag gaaaatagac tcttaaaaat gataaaaaaa aaaaaatcat 480
tcttaaggaa acatattaat aagacattta aaaaggctaa gatctttaat gtgaaaaata 540
ataagataaa gatgacaacc actgaagaga agaaaaaacg ttttatgttt tttctaaatg 600
tgtgtaaaaa caaaatcttg tacctaccaa aatgacactt ttttcaaaga aaggtatcaa 660
atgtgtatac tttaacacac agcccttcct tgtgtaaata tataggaaat ccttaaagga 720
gcataaaaca atttacttag aaattctata cttaaactta ttcaaaggaa ataattaaag 780
gtgtgtaaat aagatatgca tagcattgct ctaaatgtca aatagtaggg aactaggtaa 840
ataagatata tctatttagg gaattagtca agtaagatat acctatttag ctaattccat 900
gtagccatca aaaggatacc atagaacaga acttattgat gtgaaaagat gattaaaatg 960
tacttgttac taaaaacagc aggctgcaat actgtattaa ataatgagcc catgctgtat 1020
atctagacaa acatatatca taatgataat aataaatgta tgagacttat atttttgctt 1080
ctctgtattt tctaatttgt ctgtgataaa caaatattat taatgtaatg aagaataagc 1140
taaaatatac aaaaacaata acaactataa aaagaacccc ttcaatcaaa aagagatcat 1200
cagggattta attcaactat ggattggcac tattaggagg ccaaatatga ttcgttgaac 1260
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agcactttaa agatctattt gcaagataac aatgtgctaa ctttaagtaa tgtctatgta 1380
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cttatcacat actttatttc tacagctatg actgtcactc cccaagcttc acttcataat 1620
gaaaataaag aatacagccc ttttggaaaa gttggatggt aataccaagt gcgtaagttt 1680
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ataactgaca gaagacacaa aggcaaaaat gtcaacttca caaaaaatct tagtgctttt 1800
tggaaagaat gttatagatc atccagtcta accccctgat gttataaata tggaaattta 1860
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aatccagttg ccatcatcat ttactattta catggaacat caggttctac tttagaagtt 1980
aactatcaac ctacagggtt aaggaaaata gcaatgtgta tatacagacc ttgcatctgg 2040
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nntgtctgtc caggtgactg agactgtgac aatccacctt cagtcttgat gcctgcccac 2160
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caagacatat cccttctata aaatgtaact ccagtgatat attttcatac ttaattttgt 2460
tgttttaatt atgtaagagt tgaagatcat ctccttcaca gtaaagaaat agccataatt 2520
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acttggattt ggcagcactg aggtatgggg ctcagctctg tctttaatta attacaatta 3060
aagacagtca tacatgttaa caactctcct tcattctcac agagggaggg aagaaaaatt 3120
tctgccgagg gaattcacat tttttaataa ttttgcttcg tacttaagat aaatgatatc 3180
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tcttaacaca accttaacat tttaaaaatg tgattttccc tgtaaaggtg atcccaaacc 3420
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tgatggcttt agaaaatccc tttctttcca tgttgtcacc cctagggatt ttccacctct 3540
tgctgcattt gagactatac tgatctgctt ccagccttca cctataccaa taaaatacca 3600
ataattcatg tatttttttt ttttgagacg gagtctcgct ctgtcaccca gg 3652

<210> 201
<211> 551
<212> DNA
<213> Homo sapiens

<400> 201
gctgcagcga cgtcgggagc agaagcagcg gcgacacgac gcgcagcagc tgcagcagct 60
caagcacctg gagtcctttt acgaaaaacc tcctcctggg cttatcaagg aagatgagac 120
taagccagaa gattgcatac cagatgtacc aggcaatgaa cacgccaggg aatttytggc 180
tcatgcacca actaaaggac tttggatgcc actggggaaa gaagtcaaag ttatgcagtg 240
ttggcgttgc aaacctatgg tcaccgaacg ggtgacaaag aatgcccttt ctttatcaaa 300
ggcaaccaaa agttagagca gttcagagtg gcacatgaag atcccatgta tgacatcata 360
cgagacaata aacgacatga aaaggacgta aggatacagc agttaaaaca gttactggag 420
gattctacct cagatgaaga taggagcagc tccagttcct ctgaaggtaa agagaamcac 480
aagcaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 540
aaaagggggg g 551

<210> 202
<211> 665
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (463)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (471)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (582)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (612)
<223> n equals a,t,g, or c

<400> 202
gcggcacgag aagtcacagg tcttgccaat actgttgtag tttcttgcct atatccgtaa 60
tttgaaggaa atggtragag tgattagaga agtgtaatta ctgtaatttt ttcccctatt 120
gtagtttctt gcctgtatcc ataatttgaa ggaaatggta agagtgatta gtgaaatgta 180
attactgtaa ttttttcccc attcaacttt atatatcttt aactgatgac cagatcattg 240
ttgttctgaa ccagtttgtg gtcagcaagt gttttgtggg gttttgtttg tttgttttta 300
aagaacagtt tgggtcactt gacatggttc tccaaaggga tkttatgggt tgtwtttggt 360
tctgggtgat aaccgacttg ttagataatt tagataagca accgagttgc catgtttgtt 420
tgtcaaatct caagtgtagc ttatatttta tgttcctaga gangttgtca nggaaagatt 480
tgaccctttg gcaaatctgt ttgaatagag atactaccat gctgcccaat aaggctttct 540
ggccctgaaa aatatacgga attattcttg gaaatttgaa anggaaaaaa gaaataaact 600
gatccatgtt tnttaccatg ccaaattaat tgaaggaatt ttcctaaaag gtatctcccc 660
tcggt 665

<210> 203
<211> 2102
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1861)
<223> n equals a,t,g, or c

<400> 203
aaaaaaaaaa aaaaaagaaa aaaaccaaac taaccaaaac tctgtaaaag agtgctttga 60
gctctacaaa taccaagtat ttattgtggt atatttttag aatgtagcca tacagtgtaa 120
ttatgggtat ctgtcatgga tcacaattat tattcatagt aagtcattgt gatacagaag 180
tttgtttctt cacttcccct taagaagcca actatagtaa tcatgcaaag ttgaggagta 240
tgtccttcag ggatataaaa agaaaaacaa atctgttttt tgagctaaaa gagcacatcc 300
aaacaagaat ttaactggct aaaatttagt aattactgtt aagtaactat caaacttgaa 360
atcttacaag ataaatggtt aagatgtctt gagtatttgg gatgggggcc tgtgagtctg 420
attgagacat acattttaca gagtagcagc actggaaagg gctagtccaa cctcccagcc 480
tctgcttggg tctccgctgc cccagccaca cacatcctag aattcttgta aacatatctg 540
gctctgtgtt aacagtgcac ttgttatatg ttttctaaga gattagttct tcctgtgatt 600
tttccaagta cgctgaaagt agtagtatga acttaaggag gctagtcaaa gaaacttgga 660
gttataggta tttttaaaga ataaatcctc aattccatca tcacttggcg gggagggggc 720
acttattaag cattttagat aataaaactg gttaagctta ctctggtaga acagacaatc 780
aaatctgggg attgctgaga acaataataa gctgaagtat ggctcacaga atcctaacac 840
aaatcattaa gtctctagtt agatttgtta tcctaaaatt tttcatagaa ttttaaaatc 900
taattctgac ttgtatggtt aagaaaagca gttaaatatt ttactactta tcaagggctt 960
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tctgaaacaa aggtatgtgg tactttgtag ttattgatga gaagccagta accagtagtg 1140
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atttgtatct tattaaatta tattgtataa tgctgaagga aaacaaaaag tgttcaaata 1260
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gtagataaag agatatatag caccatgctt cttaatgctt catacttttg caaacagaaa 1380
aaaaaagttt tacttttatt ataaaacttc atctatggtc aaagtaaaca ctgttacatt 1440
taaattgctt tttaaaaaca attgcgatct aaaaagtcaa aaatctgaaa tttaataata 1500
tgagacttac actgaatata atgttcattt agaagttgct gtggtccact tcatttataa 1560
ggaacaaata tttttacagt acactatagc aacagcaaaa gccctctctc accctgatag 1620
gaatgggttt gctgggtgtc tagaagttag attcctgctg aatagaatta gccatcctta 1680
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aagtagtgaa attctgtata tactgctatt ttctgtctgt tcattgttgt gaacttctta 1800
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nctaactatt aagagatttc ttcctttctt gagtaacaaa tttggtgatt atattctttc 1920
tgatccaacc ccaaaaacta gctattctga aaaggctgat gttcactaat gggaagaatg 1980
aaatgaccct tcacctctta agggaaaaca gcctccgcca ttccctttca aaactatact 2040
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tt 2102

<210> 204
<211> 283
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (181)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (282)
<223> n equals a,t,g, or c

<400> 204
aactgatatt taataatatt taatattgct ctaaaatttc tggctaaaat gaaaatattc 60
aaccatcagg aaggagaaac aaaactatta ctgtttgtaa acagtttatc atcagtactt 120
acctaaaaat cctggagaat gagctcagaa atatttctaa gagttgagac agtttagcaa 180
natgaacaga tacaacctca aaccaaacca aactagaaag ctcagaggac acagaatgcc 240
agtactgggc tgggcaacac ctctgttgtt tgtgaaaatg tnc 283

<210> 205
<211> 425
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (34)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (77)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (424)
<223> n equals a,t,g, or c

<400> 205
ccacaccccc ataaggccat ccaaatattt aaangccccc ccagtgggaa atttggtgtt 60
taaaacctca atggaancct aatatttccc ttatgtccgt tagtcccctg taaaatgtta 120
ggtcacccca aggaaagggg agaaatagca atggttgttc ctaaggtatt gcttgccctc 180
catgtcttcc taaagagcag aacttggagt ttctccttta tgtagagaag aagtwactta 240
gggtgtattt gcaatgaaat attcatagat attgaaagct tgtgtttaca tkaaatatgt 300
ttattatcaa gaagtccttt ttccaattct gtacattaaa tatatgtgtt ttaaaaaaaa 360
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aagggggggg 420
gggnc 425

<210> 206
<211> 483
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (444)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (469)
<223> n equals a,t,g, or c

<400> 206
cccacgcgtg grcagaccgc gcagggagca cacaccgcca gtctgtgcgc tgagtcggag 60
ccagaggccg cggggacacc gggccatgca cgccccccaac tgaagctgca tctcaaagcc 120
gaagattcca gcagcccagg ggatttcaaa gagctcagac tcagaggaac atctgcggag 180
agacccccga agccctctcc agggcagtcc tcatccagac gctccgctag tgcagacagg 240
agcgcgcagt ggccccggct cgccgcgcya tggagcggat ccccagcgcg caaccacccc 300
ccgcctgcct gcccaaagca ccgggactgg agcacggaga cctaccaggg atgtaccctg 360
cccacatgta ccaagtgtac aagtcaagac ggggaataaa gcggasgrrg gacagcaagg 420
agacctacaa attgccgsam cggntcatcg agaaaagaga cktgacggnt taamgaktga 480
tcg 483

<210> 207
<211> 976
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (193)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (929)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (958)
<223> n equals a,t,g, or c

<400> 207
agctttcagc aagagatggt cacaatcaga aggataatac aaagtcaaaa gagaaggaga 60
gtgaaaacgc ttccaggaga tggtaaagga aataagcata agaaacacag aaaaagaaga 120
aaaggggagg aaagtgaggg ttttctgaac ccagagttat tagagacttc taggaaatca 180
agagaaccta cangtgttga agaaaataaa acagactcat tgtttgttct cccaagtaga 240
gatgatgcca cacctgttag agatgaacca atggatgcag aatcawtcac ttttaaatcm 300
gtgtctgaaa aagacmagag agaaagggat aaaccaaaag caaagggtga taaaaccaaa 360
cggaagaatg atggatctgc tgtgtccaaa aaagaaaata ttgtaaaacc tgctaaagga 420
ccccaagaaa aagtagatgg agaacgtgag agatctccct cgatctgaac ctcccaatta 480
aaaaagccca aagaggagac tccgaagact gacaatacta aatcatcatc ttcctctcag 540
aaggatgaaa aaatcactgg aacccccaga aaagctcact ctaaatcagc aaaagaacac 600
caagaaacaa aaccagtcaa agaggaaaaa gtgaagaagg actattccaa agatgtcaaa 660
tcagaaaagc taacaactaa ggaagaaaag gccaagaagc ctaatgagaa aaacaaacca 720
cttgataata agggagaaaa aagaaaaaga aaaactgaag aaaaaggcgt agataaagat 780
tttgagtctt cttcaatgaa aatctcgaaa ctagaagtga ctgaaatagt gaaaccatgc 840
accaaagcgc aaaatggaac ctgatactga aaaaatggwt aggacccctg aaaaggacaa 900
atttctttaa gtgcgccacc aaaaaaatnc aaactcaaca grgaaactgg gaagaaantt 960
gggagttmcc gaaatt 976

<210> 208
<211> 660
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (560)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (567)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (583)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (589)
<223> n equals a,t,g, or c

<400> 208
ccacgcgtcc gccgacacgt cgggattggc ggctgcagcc aggggtcctc cgacgctggg 60
cttccgtgag cggcgctctg ccaggtgggg ccggagctgc ggggagggag ttggcgccta 120
gcgcgcactc catccccgcc tctgcagtgg actcggccgc agaatcgggg tcccgggctc 180
ctggaacttg tcccscccag gccgcggcga ggaggtcact ccagccgatc tctggaccgg 240
attcgtccca ttctcgtcct catggtggac aagaaactgg tggtggtttt cggaggcaca 300
ggtgcccagg gtggctccgt ggcccgcaca ctcctggaag atgggacatt caaggttcga 360
gtggtgaccc gaaaccctag gaagaaggca gcaaaggagc tgaggctgca aggtgcagaa 420
gtagtgcagg gagaccaaga tgaccaggtc atcatggagc tggccctgaa tggggcttac 480
gscaccttya tcgtgaccaa ttatgggaga gctkcagcca ggagcaggag gtmaagcagg 540
ggaagcttct tgctgatctn gccaagngcc ttgggcttca ctntgtggnc ttcaaggggc 600
cttgaggaca ataaagaagg ttacgggaag ggagatttgc cgccggggaa cttttaccgg 660

<210> 209
<211> 514
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (56)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (464)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (467)
<223> n equals a,t,g, or c

<400> 209
tggaaccaat ctttgtggta catattccag ctttttgaat gagtgcatat ccagtnagta 60
cctttaaagt aacactttgt acataacaar tactcagcaa atgtgaaact ttatttgctc 120
ttacttcaaa attagtccaa aatgttggaa ataaaatata agacattgat ctagatatga 180
ggtttttctc cttcattctc agctgtcgaa gaaatcraag tagcatatgc acaaggwtaa 240
aaaccacata tacaaatact atagaacagc ttataatgaa aaccttgcct gcctttataa 300
aaaatgtgat tatcttcttc tgttaatgtc aataaaagat ggtttgtcct agaaggtcta 360
taaatggtat tatgttctgg agggtttaca tatgaaaaat gtagaaaata caaaaagtgt 420
ctatatatac aaaaatgtaa gtgttaacat ttttatattt gccntcnagc ttttttttta 480
aataaaagga atgccatatt gccattaaaa aaaa 514

<210> 210
<211> 173
<212> DNA

<213> Homo sapiens

<400> 210
gtcaatgctc tgaaatctgt ggagcaaacc acagtttcat gcccatcgtc ctagaattaa 60
ttcccctaaa aatctttgaa atagggcccg tatttaccct atagcacccc ctctaccccc 120
tctagagcca aaaaaaaaaa aaaaaaaaaa aaaaccctgg gggggggcc cgg 173

<210> 211
<211> 1521
<212> DNA
<213> Homo sapiens

<400> 211
gctatcaaaa tcatgacatt atgtcacttg gagcaacaca gttgacccgc caaggcagcc 60
tcttcctcca tagatggatg aacgctgtgg ccgctgctcc tkcmctggcc atgccctgay 120
gctgccaaca ccactgctcc tctatttata agtcttarta gagttgctga cccagcaata 180
actgaacagc tgatatgtac ctcacactaa gccaggcgct tcatatgtat ctaacttgaa 240
aaatgctgag ctagttacct taacaccatt aacttttact taaaagtttg tttttctttt 300
ttaatcccag tgagctccaa acaagtttta ggaggctccc caaaaccagt gaagacttta 360
actaaaagta gaatttcaaa gtattagaaa ccaaacccca aaattaaatg tgaagatcag 420
tgtctgtact gagctggccc atctggtgga cacaggattt gcgttatcga ctgcaatgtt 480
acccaggatt cacgatttct agcatctgtc agggttaaga aaattggatt gagtaccaaa 540
tacagcagag caaacccggc tttgaggcaa gggccccatc aagtagtcat gcagtacttt 600
tgttagggtt ctgggtgcaa atcttcctcg tccctcccac cttctcctgg cctccttgta 660
aacccaaacc gccaggtacc tcaattttct tcaagaccag gctgttctta atgttggtaa 720
attggtcaag gaaatgggtg agccactgct tgctctgcac atcgtcctca gagtgctcgg 780
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cggtcagagt ccttggtggt gaagtggccc tgcacaaaac gttgctcccc cttggccggt 1440
gaaagaataa aagaaagctg gccacttgca aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1500
aaaaaaaaaa aaaaaactcg a 1521

<210> 212
<211> 1875
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1052)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (1291)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1849)
<223> n equals a,t,g, or c

<400> 212
gtctgctgtt gtcagaaggc agggagggtg atgaaggact gacccacatg gactgggatg 60
tgtgtcggtt atgggcatga ctgcacgttc actctcagtg ggatctgggc aacatggagt 120
tcattgtcct gttgcttact tactgcaatg tctttggccc tccttttcaa ctggttcctc 180
tgttgggccc aaaggttggg agtaggagac agtatcccag gctgacaagg gcttgccytt 240
taccttgggc accttgttaa tttttagcct gtgcccttcc ccacctttgc cctcccagtg 300
gttggtatgt gggaagccca tctcagttcc tgtgacttca tgtctcaaac caaggatgag 360
cgtctggtct ctgctatgat ggtggtatcc gaggcctttc cctgcccagt ctggtgcctg 420
ccccacattg taccggacac tggattcctg gacccccttc tcctttcctt tctttccttc 480
aggtcacgca gccctgtact gtatccagca ccacagaaac ctcagtgttt ttcctctgct 540
ggtttggggc acaaggaagc cttagggtat ggggaaaggc tgttattacc tagagtttac 600
tcccaggcca gggggctgcc atcttcttca cagacatccc tgaaaggaag ccccttttggg 660
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gtaattatgc ttttcttttt aatacaaaaa aatgtataaa aataaacact tgaaaaggca 1800
aaaaaaaaaa aaaaaaaaaa aaaactcgag ggggggcccg tacccaatnc gccggatagt 1860
gatcgtataa caatc 1875

<210> 213
<211> 1917
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (798)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (802)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1073)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1748)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1829)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1887)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1891)
<223> n equals a,t,g, or c

<400> 213
gaattcggca cgaggcagtg gtgtgatctc agctcactgc aacctccacg tcttgggttc 60
atgcaattgt cctgcctcag cctcccaagt agctgggatt acagacatgt gccaccatgc 120
ccggctaatt tttgtatttt tagtagagac ggggtttcac tatgttggtc aggctgatct 180
caaactcctg acctcaagtg atccaccccc ctcggcctcc caaagtgcta ggattacagg 240
catgagccac catgtctggc cctacttttc ttttatgcct tctttttgga ttaatcaaat 300
atttagtttc attaccccac tattaacttt ttctattata tattcttttt ttaattaagt 360
gattaccctt gggttgttac atacatcctg aacttcttat agtaaatata catgattaat 420
ttaacctctt ccctagcaat gctcagattt tagaacatta taattccatt tagtctcttc 480
tacctttgt tttattgttt tcatgtattg taatcctaaa catattttac accccacaag 540
acaatatatt agtgttgcat atcctcaata ttcatttaga ttaatccata caattactct 600
ttctattgtc tttcactcct tactgaattt ctaggctttt atctgaaatt attttccttc 660
tgcctgaaga actacctttt atagtaattt tagtgtaatt ctgcttarga agtattatct 720
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cactgccacc atttattga aagtcagcac caaatcaatt aaaaactgaa ggtaatattt 900
ctccccctca ggctgttawa aattttttc yttgaccttg gtttttawta gkgttactgt 960
aatgtgccaa gatgtgmctt tctttawatt catcctgctt gggattttca ggaattcatg 1020
cctcagggct ttatgtcttt cattagtttt gggaaaattt taagccatta acntttcaaa 1080

gatcatctct tccctattct ctcttyctct ctctgctatc cttttgraac tccaattmca 1140
tgaaagttag atttgttcat gttattcctt acgtttctta tgttcttttt tatattttcc 1200
atctttttcc ctctctgagt gtcagctctg tgataaggta gtcttgagga cttgtgtctg 1260
ctggaaggaa ctgatctgac ttggagamcc tcaaaaaagc tctatctctg gatattcatg 1320
aaaagaatag caattagaag caatctgctc aaagtcagca ttgcaactgc ttagggctgc 1380
aatataggtt gaggcaccaa gagactagca aatattttat agggttacct gagaaacaag 1440
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aaggttgtgt gcatgttcaa ggctgcatgc atgttcagga aataccaaca ggggccaagt 1560
tacttattca tctcttactg accttggagc tcagtgtaag caggcaatga aacctaaggc 1620
aaatttataa actgcctgaa ctttgaaggc atgtggaaac tcataaacag cttctctcag 1680
ccagttgcag aagatttact tattcaagtc atttaagaaa accttctaac ccaaaatttc 1740
ccatgctncc tgagatgacc aggacctaga agtagctaaa atagaacaga tttaaaaagt 1800
acataattct gtggagatct gaggctttna ctagcttgaa tgtacaacac acaacctgtg 1860
ggtgggataa attaagcata aacttgngta naaaaaaaaa actcaggggc cggccat 1917

<210> 214
<211> 1544
<212> DNA
<213> Homo sapiens

<400> 214
ggcacgagct atagcaatct gggttttctt agccaattga aatgggcatt tattagatca 60
tttaagcatc atatcaatat agtatatttg gcgactttat gataagttct tatgatagat 120
gttcaaaact ctgctcaggt gacattttta tggatccaca tagtttttgt catatatgaa 180
aagaaagcat tgagttgtgc agatggttaa atgtgcattg agttatttct ctggaatttg 240
catgagaatg gaccgacttg tagttgtatt aacttttcta gtgcccaggt tagaaagttt 300
gatctgtgta gtttttaaag gcagcatcca aatcacttat attcagaaga aaatggtaac 360
agatttagaa gctgtctata ttttccccat tatccataat acatattatt ggcaatatgg 420
ttttcactct ttgttgttaa cgtatcaaca atgtgcaata gccactaata atcatttgtt 480
aatgcatgct tccaagttct gtatttgaaa atctcagact tcatatatgg taagtgatgg 540
agtaatttat aacttttatg ttgaattctt gctactttaa aaaattgtgc ttctcctttt 600
ttaaagcata tgacttactt aacagctgat agtcagttac ctggattttt agtatttttt 660
tacatcacaa aaagatttct ctgaagtttg cgcaggggtc tatttgtagg cagtttccaa 720
cttactaata agtaaggttc tgaaagttat aagttagctg tctggaatag atagtctcat 780
agaaaccagg ttgtagatgg tgatttggtt ccttgggcaa cctactgaaa cccatttact 840
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gaaatcaaaa aacctattga gatggaattt gggaggaaag gaggacttac tgatatccct 1080
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gcctgtaatc ccagctactc aggaggcgga ggcaggagaa tggcgcgaac ccgggaggcg 1440
gagcttgcag tgagccgaga tggctccact gcactccagc ctgggcgaca cagcgagact 1500
ccgtctcaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa 1544

<210> 215
<211> 1762
<212> DNA

<213> Homo sapiens

<400> 215
catgagccac tgcacccagc cgatactact atatccccat tttacagatg agcacatggg 60
caaattgagg gtaaggcact gacccatgat catacagctg agaagtggca aaggcaggat 120
ttgaacctag aacctctggc tccacacact agtaatctaa accactctcc ctacaataca 180
acatacgtgg taaagatgtg tggtgggcac gcaatcaacg taggtccctt cacagttgct 240
gggagaggca ggaatttgca gttcctccgc gttctcctcc tccgctgccc acctgtcctg 300
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ctgggcaggg ttttatgggc tctgataagg ccctggcagg gccgaagttc atgagcactt 420
cctctttgca ggagggcgta ggggagggga cccaggtgat ttgggtcctg gctggtcacc 480
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aagagccacc accgcctgcc atccgccacc atctcccact cctgcagctc ttctcacagg 660
accagccact agcgcagcct cgagcgatgg cctatgtccc cgcaccgggc taccagccca 720
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ctgtttacat ccaaggagtg gtcagcgagc acatgaagcg gttcttcgtg aactttgtgg 840
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gcatgccctt caaaaagggt gccgcctttg agctggtctt catagtcctg gctgagcact 1020
acaaggtggt ggtaaatgga aatcccttct atgagtacgg gcaccggctt cccctacaga 1080
tggtcaccca cctgcaagtg gatggggatc tgcaacttca atcaatcaac ttcatcggag 1140
gccagcccct ccggccccag ggacccccga tgatgccacc ttaccctggt cccggacatt 1200
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gctatgtgcc tcccacaggc aagagctttg ctatcaactt caaggtgggc tcctcagggg 1380
acatagctct gcacattaat ccccgcatgg gcaacggtac cgtggtccgg aacagccttc 1440
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agcacctctt tgactttgcc catcgcctct cggccttcca gagggtggac acattggaaa 1620
tccagggtga tgtcaccttg tcctatgtcc agatctaatc tattcctggg gccataactc 1680
atgggaaaac agaattatcc cctaggactc ctttctaagc ccctaataaa atgtctgagg 1740
gtgtctcatg aaaaaaaaaa aa 1762

<210> 216
<211> 253
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (236)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (238)
<223> n equals a,t,g, or c

<400> 216
gggtaaatga gtgccagggc cggcaagccc ccgctccccg ggctctcggg gtcgcgcgag 60

gatgcttggc acgtaccccg tgtacatact tcccgggcgc ccagcatgga aataaagcac 120
ccascrctgc cctgggcccc tgcgaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 180
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaagggg ggccgntnta 240
aaaggttccc tcg 253

<210> 217
<211> 511
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (471)
<223> n equals a,t,g, or c

<400> 217
ccccagcggg cgcgggccgg agcacgggya cccagcatgg gggtactgct cacacagagg 60
acgctgctca gtctggtsct tgcactcctg tttccaagca tggcgagcat ggcggctata 120
ggcagctgct cgaaagagta ccgcgtgctc cttggccagc tccagaagca gacagatctc 180
atgcaggaca ccagcagact cctggacccc tatgtaagca cctgggccct tgtggcatct 240
gagtctcaga gaactatggg gttaggaagg gagtgagaag cagggaggac aggcctagcc 300
ccactccata tggccaggtc ggggaactga gtcgctatgt tattccagcc ttaaccctga 360
ggagctaagg ctggccctcc agctttccta gctctgtggt cccggggcgg gactccggac 420
accatcacca tgctmactgc ttactcagtg tgtttcctgc acacctgcca ngcttctggt 480
ctaggcaatg ggacgtagca gtgaagcaag a 511

<210> 218
<211> 2945
<212> DNA
<213> Homo sapiens

<400> 218
ggaattccaa ctatggcctg ctgcctgttt ttggctggtg agctaagaat gatttttaca 60
tttttaaatt attggaaata tcaacaccgg aattatattt catgatatgt gaaaattaca 120
tgaagttcaa atctcagtgt ctagaaataa agttttattc gcacacagcc tgctcatttg 180
tttacctatt gtgcatggcc actttcacat tacagtggca gagttgaaca gctgctgcag 240
agactagcca caaaactaat aacgtttact gcttggccct tacagaactt tgccgagccc 300
tcatttaaag taatagattt aaacagtctc cataagcagc tgctggcttt gaaggtaggt 360
gcagccacta gtgcttttct tggcagattc attgccaagg aacagtttgt taagtaattc 420
ccttgttttg tgtgccaggc tccataaaga aagggttctc acgctcaaat atatgggcaa 480
tacctcatgc tatgtatgta tatgtgattt atttctctct agggaacaaa cctgtataat 540
tgcttaatgt agtctcctta aaaggtagaa aagggctctt tggtcaaata attgtaggaa 600
aaagattgac aatcacagtg ctgagaaggc ctccaataga gaagttggtt tagttgttcc 660
tcgatctccc acctcctcct tttgagctca gccttttaga aattaatcat tgcctcctct 720
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gccagtaagt gaggagcttt taaagccctt tctttgtggg aggggccaca aggggccagg 840
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cagaaggtat tttcatcttt cctggaactg cgttaaaggg ccctgggcag tgaaggagcc 2160
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gaggcgtgaa ggatgggaac cagcctcccc tggctgcttt gggccggctt cccccttgcc 2520
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gggtctccct gttggaagac cggcaagatg ccgtgtactt actttaagaa gcaaatgaag 2640
gttgggcgcg gtgctcacgc ctgtaatcct agcactttgg gaggccgagg tgggcggatt 2700
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aaacacgaaa attagctgga tgtggtagta ggctcctgta gtcgcagcta ctcgggaggc 2820
tgaggcagga gaatcacttg aacccgtggg ggcagaggtt gcagtgagcc aagatcgtgc 2880
cactgcactc cagcctggat gacagagtga tactccatct caaaaaaaaa aaaaaaaaaa 2940
aaaaa 2945

<210> 219
<211> 445
<212> DNA
<213> Homo sapiens

<400> 219
ggtaccgggt ccggaattcc cgggtcgacc cacgcgtccg ggaactgtga cttccccacc 60
ccaaattcta tggccggcta atgttttgct atggtgacta tcacccatct acctggaagc 120
accagaatgg cttagtacag ctagggagct cagccagatc tcggtgtctg ctgtttgaga 180
ttgtgtggaa ggactattgc taagaagcag gagacagact gaacccagtg ttggccacaa 240
gtgaggactg agacccaggt cacctcttgg ctgaacatgt tagcttgttg gtaaatggct 300
ctgcagtggt tctgcatttt agtggggaat ttgttttggt tcattttggc attcccgcaa 360
ccatcttgtt ggtttttggg taaaatgtgg caccccytcc agacctytta gctgtggaam 420
tgagrtattt tagcagggtc ccgtt 445

<210> 220
<211> 522
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (402)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (417)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (480)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (482)
<223> n equals a,t,g, or c

<400> 220
cctttaaata atgaataata gtgatagaaa atgtcatttc ttggacaaat gaaaaattga 60
aattaatgta tataattaga tattattagc tactcttagg tagcttcatt tgttgaaagt 120
ttgacaagtg aatgaagttc acatctggaa atcgttgaac atttttcgtt catggaactc 180
aatggctacg ttagtcgttt atgcttttca ctgttgtggt aggggctttg gaagtaaatg 240
ccatcaacaa tggatacaga agacctggat ttggaataag ggcaaaattt atttgatggg 300
gctgaattgc tctgccagga gcatttggta tgagatgaaa tggctctctt gagactgagc 360
tgccacctgg gcaatattgg ccgctaaggg tctctttatt cnccttactt ggacttnctt 420
tcctggaggg aatctcccga aaaaggaaac tttccttccc cagggggggcc ccaatggttn 480
cnagggctgg cttcaaaatg ggttccccaa ctggtggcat ca 522

<210> 221
<211> 1516
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1493)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1497)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1508)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1509)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1516)
<223> n equals a,t,g, or c

<400> 221
gaatgagcag gataactgtg tcctgattca tgatgtggac caaaggaaca gcgataaaga 60
tatctttggg gatgcctgtg ataactgcct gagtgtctta rataacgacc agaaagacac 120
cgatggggat ggaagaggag atgcctgtga tgatgacatg gatggagatg gaataaaaaa 180
cattctggac aactgcccaa aatttcccaa tcgtgaccaa cgggacaagg atggtgatgg 240
tgtgggggat gcctgtgaca gttgtcctga tgtcagcaac cctaaccagt ctgatgtgga 300
taatgatctg gttggggact cctgtgacac caatcaggac agtgatggag atgggcacca 360
ggacagcaca gacaactgcc ccaccgtcat taacagtgcc cagctggaca ccgataagga 420
tggaattggt gacgagtgtg atgatgatga tgacaatgat ggtatcccag acctggtgcc 480
ccctggacca gacaactgcc ggctggtccc caacccagcc caggaggata gcaacagcga 540
cggagtggga gacatctgtg agtctgactt tgaccaggac caggtcatcg atcggatcga 600
cgtctgccca gagaacgcag aggtcaccct gaccgacttc agggcttacc agaccgtggt 660
cctggatcct gaaggggatg cccagatcga tcccaactgg gtggtcctga accagggcat 720
ggagattgta cagaccatga acagtgatcc tggcctggca gtggggtaca cagcttttaa 780
tggagttgac ttcgaaggga ccttccatgt gaatacccag acagatgatg actatgcagg 840
ctttatcttt ggctaccaag atagctccag cttctacgtg gtcatgtgga agcagacgga 900
gcagacatat tggcaagcca ccccattccg agcagttgca gaacctggca ttcagctcaa 960
ggctgtgaag tctaagacag gtccagggga gcatctccgg aactccctgt ggcacacggg 1020
ggacaccagt gaccaggtca ggctgctgtg gaaggactcc aggaatgtgg gctggaagga 1080
caaggtgtcc taccgctggt tcctacagca caggccccag gtgggctaca tcagggtacg 1140
attttatgaa ggctctgagt tggtggctga ctctggcgtc accatagaca ccacaatgcg 1200
tggaggccga cttggcgttt tctgcttctc tcaagaaaac atcatctggt ccaacctcaa 1260
gtatcgctgc aatgacacca tccctgagga cttccaagag tttcaaaccc agaatttcga 1320
ccgcttcgat aattaaacca aggaagcaat ctgtaactgc ttttcggaac actaaaacca 1380
tatatatttt aacttcaatt ttctttagct tttaccaacc caaatatatc aaaacgtttt 1440
atgtgaatgt ggcaataaag gagaagagat catttttaaa aaaaaaaaaa aanttcnggg 1500
gggcccgnnc caattn 1516

<210> 222
<211> 1387
<212> DNA
<213> Homo sapiens

<400> 222
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ctccttcata gtgagaagtt ccaggtttga ccataagcac ctctcactta ggtggaccag 120
tcagctgctg tcgtcccagg gtggagccca ctgctacttc aggaggggcc tgctcaggtg 180
tagttaccac aggtgatggc tgagttcaga aacaacccag gggaagtgga aggaagaaag 240
gcaaaaagca tgaaggacaa gacaactggg aagaaccagg acaatcctgt gattgatgaa 300
atagacttcc ttgaagcttt taaaaatatt cagccctcat cgtttcgaag cgtcattgga 360

ttaatggata tcaagcctgt tgactgggag gagattggtg gccttgaaga tgtaaaactg 420
aagttaaaac agagcattga gtggcctctg aaattccctt gggaatttgt tagaatgggc 480
ctgacacaac caaagggagt tctcctctat gggcccccctg gatgtgctaa aaccactctg 540
gtgagggccc tggccacaag ctgtcactgc tctttcgttt cagtgagtgg agctgatctg 600
ttttcaccgt ttgttggaga ttcagaaaaa gtgttgtctc agatatttcg acaagcaaga 660
gcaagcactc cagcaatttt gtttttggat gaaattgatt caatcttggg agctcgctca 720
gccagcaaga caggatgtga tgttcaagaa cgagttcttt ctgttctcct gaatgaatta 780
gatggtgttg gacttaagac aatagagaga agaggaagta aatcaagtca acaggagttt 840
caagaagttt ttaaccgaag tgtcatgatt attgcagcaa caawtagacc tgatgtgtta 900
gatactgctt tgttacgacc tggaagatta gataagatca tctatatccc acctccagat 960
cacaagggca ggctttctat tttaaaagtc tgtacaaaaa ccatgccaat agggcctgat 1020
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ttggctttat atgaaaactt atttaagaaa gaaggatttt ctaacgtgga aggtatttaa 1260
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gcaacttcac acttttagaa tttgtgttta tatttcctgt aagtgaataa ataaaacaaa 1380
acaaaac 1387

<210> 223
<211> 1506
<212> DNA
<213> Homo sapiens

<400> 223
gaattcggca caggtgggta gaggtgatgc agtgctgaag acctgggccc ctgctcagtg 60
cctttgctct agaatgggtc cagcttggct ttggctactg ggaacaggga tcctggcctc 120
tgtccactgt cagccccttc ttgcccatgg agataaaagt ctgcaggggc ctcaaccccc 180
caggcatcag ctctcagagc cagcccccgc ctaccacaga atcacaccca ccattaccaa 240
ttttgctttg cgtttgtata aagagctggc agcagacgcc cccggaaaca tcttcttctc 300
gccagtgagc atctccacca ccctggccct gctctctctt ggggcccaag ctaacacctc 360
agctctgatc ctggagggcc tgggattcaa cctcacagaa acccctgaag ccgacatcca 420
ccagggcttc cggagcctcc tccacaccct tgccctgccc agccccaaac tcgaactaaa 480
agtaggaaac tccctgttcc tagacaagcg actaaagcct cggcagcact atttggacag 540
catcaaggag ctttatggag cttttgcttt ttctgccaac ttcacagatt ctgttacaac 600
tgggaggcag attaatgact atttgagaag gcaaacatac gggcaagtcg tggactgcct 660
cccggagttc agccaggaca cgttcatggt tcttgccaat tacatcttct tcaaagccaa 720
gtggaagcac cctttcagtc gctaccagac ccagaagcag gaaagtttct ttgtggatga 780
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gtcacacaag gcgatggtgg acatgagtga gaaggggacc gaggccgggg ctgcttcagg 1200
cctcctctcc cagcccccat ctctgaacac catgtcagac ccacatgccc acttcaacag 1260
gcctttcctc ttgctccttt gggaggtcac cacccagagc ttactcttcc tgggaaaagt 1320
tgtcaaccca gttgcagggt aaccatggtg ggaggccagg agttatctta tctcatcctg 1380
gaccaaacag ataggccaga accagcctgc atcctggggc tgctatgtgg ttcagttaat 1440
cagtgtgcca agattctaat aaagttgacc ttgggttctg tgaaaaaaaa aaaaaaaaaa 1500
aaaaaa 1506

<210> 224
<211> 896
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (18)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (45)
<223> n equals a,t,g, or c

<400> 224
aaaagctcgg cccttaancc ttactaaagg gaacaaaagn tgganctcca ccgcggtggc 60
ggccgctcta caactagtgg atcccccggg ctgcaggaat tcggcacgag aagagcactg 120
gccaagtcag cttcttctga gagagtctct agaagacatg atgctacact cagctttggg 180
tctctgcctc ttactcgtca cagtttcttc caaccttgcc attgcaataa aaaaggaaaa 240
gaggcctcct cagacactct caagaggatg gggagatgac atcacttggg tacaaactta 300
tgaagaaggt ctcttttatg ctcaaaaaag taagaagcca ttaatggtta ttcatcacct 360
ggaggattgt caatactctc aagcactaaa gaaagtattt gcccaaaatg aagaaataca 420
agaaatggct cagaataagt tcatcatgct aaaccttatg catgaaacca ctgataagaa 480
tttatcacct gatgggcaat atgtgcctag aaatcatgtt tgtagaccct tctttaacag 540
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taccсctatt gatagaaaac atgaagaaag cattaagact tattcagtca gagctataag 660
agatgataga aaaaagcctt cacttcaaag aagtcaaatt tcatgaagaa aacctctggc 720
acattgacaa atactaaatg tgcaagtata tagattttgt aatattacta tttagttttt 780
ttaatgtgtt tgcaatagtc ttattaaaat aaatgttttt taaaaaaaaa aaaaaaaaaa 840
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 896

<210> 225
<211> 127
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (94)
<223> n equals a,t,g, or c

<400> 225
ggaggaacct ccagtctcag caccatgaat caaactgcca ttctgaattt gctgccttat 60
ctttctgact ctaagtggca ttcaaggtaa gggncatcaa agggtacttg aatttgtaag 120

atgagat 127

<210> 226
<211> 1949
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1466)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1540)
<223> n equals a,t,g, or c

<400> 226
ctgagaggca ggtagctgcg gcgcagggct gacggcggcg agtccacgtg ctccccgcgg 60
ccggttgaaa ccgttggcgg gcgctggctg agaggcaatg tttgctgtct tccattggag 120
tgactgaatt tctacatgac ggctttttga caagacttaa aacctgtctt ggatagagaa 180
tatttagcca tttacctaaa aatggtattt tttacatgca atgcatgtgg tgaatcagtg 240
aagaaaatac aagtggaaaa gcatgtgtct gtttgcagaa actgtgaatg cctttcttgc 300
attgactgcg gtaaagattt ctggggcgat gactataaaa accacgtgaa atgcataagt 360
gaagatcaga agtatggtgg caaaggctat gaaggtaaaa cccacaaagg cgacatcaaa 420
cagcaggcgt ggattcagaa aattagtgaa ttaataaaga gacccaatgt cagccccaaa 480
gtgagagaac ttttagagca aattagtgct tttgacaacg ttcccaggaa aaaggcaaaa 540
tttcagaatt ggatgaagaa cagtttaaaa gttcataatg aatccattct ggaccaggtg 600
tggaatatct tttctgaagc ttccaacagc gaaccagtca ataaggaaca ggatcaacgg 660
ccactccacc cagtggcaaa tccacatgca gaaatctcca ccaaggttcc agcctccaaa 720
gtgaaagacg ccgtggaaca gcaaggggag gtgaagaaga ataaaagaga aagaaaggaa 780
gaacggcaga agaaaaggaa aagagaaaag aaagaactga aagttagaaa accaccaggg 840
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aaggaaaaag gttttagctc agtactacac agtgacagat gagcatcaca gatccgaaga 1260
ggaactcctg gtcatcttta acaagaaaat cagcaagaac cctaccttta agttattaaa 1320
ggacaaagtc aagcttgtga aatgaacatt tgtgtattta aaaattgaat ccattctgct 1380
gacttcttcc tttcactgct gtttataaaa tgtgtaatga attctaacaa ctcaaatttt 1440
gctttttgaa gctgtatttt taagtnaaga aaatatattt ttggtataac ttttatgaga 1500
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ttatttattt tttgtgctgc tttttatcat gatataaatt attgaaaaca gatcacatgt 1800
gggcccgtgt ctggccgccg ccgccctgcc ccgtcctgcg gccaccacct aatttattgc 1860
cgtgcgtcct gctgctgtga ctgcttttgt acctttgcaa taaagaattt tctggtttca 1920
gaaaaaaaaa aaaaaaaaaa aaaaaaaaa 1949

<210> 227
<211> 1179
<212> DNA
<213> Homo sapiens

<400> 227
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ggtcaggcac agcagggtcc tgtgtccgcg ctgagccgcg ctctccctgc tccagcaagg 120
accatgaggg cgctggaggg gccaggcctg tcgctgctgt gcctggtgtt ggcgctgcct 180
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gacgcagaga caggggagcg gctggtgtgc gcccagtgcc ccccaggcac ctttgtgcag 300
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gccctcaatg tgccaggctc ttcctcccat gacaccctgt gcaccagctg cactggcttc 720
cccctcagca ccagggtacc aggagctgag gagtgtgagc gtgccgtcat cgactttgtg 780
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cggctcacgg agctcctggg ggcgcaggac ggggcgctgc tggtgcggct gctgcaggcg 960
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aggctttttt ttaaatagaa gaaatgaggt ttcttaaagc ttatttttat aaagcttttt 1140
cataaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaa 1179

<210> 228
<211> 1958
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (374)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (377)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1244)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1300)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1311)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1327)
<223> n equals a,t,g, or c

<400> 228
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atctgattag ttatccacgc ccagagctac actttctcga tgcttctcag ctctgactct 540
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gtcctgcagg ctgtaatgca gtttaatcag agtgccattt tttttttgt tcaaatgatt 1860
ttaattattg gaatgcacaa ttttttaat atgcaaataa aaagtttaaa aacttaaaaa 1920
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<210> 229
<211> 1751
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1741)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1742)
<223> n equals a,t,g, or c

<400> 229
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cacttgaaca aacctggtgg tctttggaaa taaatcacca ttagatttca cctggttatg 180
ctgcatccca taagttccaa atgaatcacc tgcttatcct attaacgaag catttaattc 240
acacacaaat gcttgaattt cccctgtata aatgtagtca tgcgattcaa cttttctaat 300
aagatttgtg aatgctgcat catgatgaaa atgtggatta actgtgggtt gcatgcctgt 360
tgttcatact tcagtgatgg tcacacacaa aacaagatga gttttactta ggtgaaacat 420
tattaaactg tactaacaat acagaaacat attctctttg tcgcttttta tcaccaaaac 480
tgaatggcaa atatgtcttg acattacttg gatgaactgt ggctagcaaa atggaattaa 540
cttagccact ataatttttt aaaacattaa agtttctaaa ttgtttttgg gggccgagta 600
acgcagagtc aataaaggtg gttatattgt aagcttttag atggtgctta agaattctta 660
tctttttaaa tagcagtatt tttttttaa gaataaattg taaggagcaa ataaggcaga 720
atgccactct accctcaggt caattttatg gtatatgaaa atgccagtaa tatttgtgcc 780
acttgccaac tcgggggagg aggggctttt cccttactgg atacttttgt tatagtttga 840
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cattatcaga ctgactgaat gctttctgat ttccagtgag tgatctagtt ctacgtatta 1260
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ttgtataata ttagaggata ctttgctgtg cacaattcca agtgccttag aacattgttt 1560
agctttccta agtatatata aatgcatata tgtataaaat tgggaaaagt tacctcaata 1620
aaatcattgg gaaatcccaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1680
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1740
nnaaaaaggg c 1751

<210> 230
<211> 2153
<212> DNA
<213> Homo sapiens

<400> 230
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cccatatgtg gtctgtgagc caccccttaac actggttcct ttgctctttg atatgcctac 180
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acagatacta aaattcacac tcaagtccgt tattttatat aagtgtgaga tcttagataa 420
cctatgcata ctctcccata tactgtaaat aatctctaga tgatttgtaa tacctaacaa 480
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<210> 231
<211> 1360
<212> DNA
<213> Homo sapiens

<400> 231
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actacccctc cagcaactgg gaggtgggac tgtcagaagc tggcccaggg tggtggtcag 180
ctgggtcagg gacctacggc acctgctgga ccacctcgcc ttctccatcg aagcagggaa 240
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1360

<210> 232
<211> 1986
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (6)
<223> n equals a,t,g, or c

<400> 232
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gtacctgctg cttggcttca acctgctctt ctggctggct ggatcggccg tcattgcttt 120
tggactatgg tttcggttcg gaggtgccat aaaggagtta tcatcagagg acaagtcccc 180
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gaattgcatc gatgaaattg agaccataat cagtgttaag ctccagctca ttggaattgt 600
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ggcaacagaa acaagttaag gaaaccaaaa tacttatata tacacaggac caaaataatg 1920
ttctttttat gcaaatcccc tgtggaaata aaattttcaa tgtttaaaaa aaaaaaaaaa 1980
aaaaaa 1986

<210> 233
<211> 705
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (108)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (680)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (696)
<223> n equals a,t,g, or c

<400> 233
ggattacatg tagttattga gaatcctttc gtaattcagt ggcttaatca tgtaatgtct 60
aaatattgtt gtacattagg atgtatacat gtaaattaaa gttacatntg tttagcatag 120
acaagcttaa cattgtagat gtttctcttc aaaaatcatc ttaaacattt gcatttggaa 180
ttgtgttaaa tagaatgtgt gaacactgta ttagtaaact tcatcacctt tctacttcct 240
tatagtttga acttttcagt ttttgtagtt cccaaacagt tgctcaattt agagcaaatt 300
aatttaacac ctgccaaaaa aaggctgctg ttggcttatc agttgtcttt aaattcaaat 360
gctcatgtga cttttatcac atcaaaaaat atttcattaa tgattcacct ttagctctga 420
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tatttgagaa ttttggtgaa aaatatttag ctgagggcag tatagaactt ataaaccaat 540
atattgatat ttttaaaaca tttttacata taagtaaact gccatctttg agcataacta 600
catttaaaaa taaagctgca tatttttaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 660
aaaaaaaaar gggggggggn cccccaaaaa aacccntttt ttttt 705

<210> 234
<211> 838
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (32)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (51)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (822)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (832)
<223> n equals a,t,g, or c

<400> 234
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gccctttcca tccattaaaa atgtccaagt tccaagtgat atgtgcccct aatatccacc 120
ttggatgttg gtgggttttt gaatttttgg gtggttaatc cagttttatt ttgaaaagac 180
gtacttgaat agttacagca tatgtttgaa caggaagtag gaacatgcat acacgaagaa 240
atgctaacgg aaggatttgt tatgtttagg atcttccctt ggaaactaaa aatagaatat 300
taatgacatt actgtttgta gaatgacata tgcagatttt ctcataagca gtcattgtgt 360
ttgccagtaa tgtttgagag acatgtaagt tgaaagtttt gctaaattat aaagctcctt 420
taattcgttg gttttgattc tcttattctc ttgtcttttc taaatgttaa caaaatatat 480
cttaacagat tacatgaaat ttaggaatta tttaaaagtt accattagct ctaaaattaa 540
gattcggatg ctttatttat agtaactgaa gctaataatg ttttatgttt tgattttttg 600
aaatttaatt gtagaagtca ctgccttctg agttttcaaa tagataacca cctttaatat 660
tacactgctt ataatactaa tgtttacaga tatgtttctg tttataacca tataatacat 720
tggctttgtc atattagttt tttttgcaag tagttatgta aaagagatag ataataaaat 780
attaaataac aaaaaaaaaa raaaargctc gagtaarggc anagtggcat gngccata 838

<210> 235
<211> 1410
<212> DNA
<213> Homo sapiens

<400> 235
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gtgtgagcct gaatttggca atgacaaggc cagggagccg agcgtgggtg gcaggtggcg 180
agtgtcctgg tacgaacggt ttgtgcagcc atgtctggtc gaactgctgg gctctgctct 240
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<210> 236
<211> 422
<212> DNA
<213> Homo sapiens

<400> 236
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tttctgccac tcactggtag cctggtagat ttgtagcaac tgttgcagcg cgccaatgcg 180
gaagtcagtt tcatcggtca gctgattgaa catgtcttcc gcgcggtcat ataacccggc 240
ggccatgtaa tcacgcccca gttgttgaat cgccaacaga cgctgttcat aggtcagcga 300
ggcgctttcc attagggtct gatggatgcg aatagcgcgg ttcaacttcg ccacggaacg 360
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at 422

<210> 237
<211> 351
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (253)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (322)
<223> n equals a,t,g, or c

<400> 237
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cgttacgtta gaaaaatttc gttgcgtgct gaaagcgctt ttacctgtgt tgtatgattt 180
aaccttatga aaatggacag tatttccagt tttacaagtg aggaaagaag attaagaaac 240
ttgcctccgc cangcgtggt ggttcactcc ctgtaatccc agcactttcg gcggccgaag 300
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<210> 238
<211> 2682
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (647)
<223> n equals a,t,g, or c

<400> 238
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tagacagact atgctctttt ctgccaccca aactcgaaaa gttgaagacc tggcaaggat 180
ttctctgaaa aaggagccat tgtatgttgg cgttgatgat gataaagcga atgcaacagt 240
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gtctgtgaaa taccactatg agttgctgaa ctacattgat ttgcccgtct tggccattca 360
tggaaagcaa aagcaaaata agcgtacaac cacattcttc cagttctgca atgcagattc 420
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gattgttcag tatgaccctc cggatgaccc taaggaatat attcatcgtg tgggtagaac 540
agccagaggc ytaaatggga gagggcatgc cttgctcatt ttgcgcccag aagaattggg 600
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ataagtcagc ccaggaagca tataagtcat acatacgagc ctatgattcc cattctctga 780
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aaataattac ttcaatgttg aaaaaaaaaa aaaaaaaaaa aa 2682

<210> 239
<211> 2254
<212> DNA
<213> Homo sapiens

<400> 239
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tcaaatccac aatatgctgt ataataccgg ttttactata taatctattt tagacatagc 180
tgtttagaac tagagtgtgc tatttttgtg tttttctgat gtgtggtgct agacaagtta 240
cttttgtgaa caacaaaaat tatccctttt attcctagac aataccacct ttgggtcttg 300
ttaatttcac tgagtataac tatatatttg tatatatata catatatata tatatctacc 360
tatgcccaac tggcagctgt atcagagtgc tggatttggg acatgctttt ctctttaaat 420
acataatatc attatataaa ttattctaga gtgtatttaa ttaggataaa attacttcct 480
tagtatggat atttgacatc tatagggtga atttgtttat aaatatggct atatggaaac 540
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ataatttgcc aggccttcaa gatcctaaag aaacttgttt aatggagtaa tatacttttt 660
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ctaatggaaa aaaaaaaaaa aaaaaaaact cgag 2254

<210> 240
<211> 1057
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (958)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (966)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1035)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1053)
<223> n equals a,t,g, or c

<400> 240
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cagcctttag cttattcctc cttcaataca cgggaccttt ggttaatttg gggcaggaaa 120
actcttaaag taatctctct tgggcagagg ccttattgca ccagagggaa aaagtatata 180
cttcatttgc tgttactcca gttatgcctt aaattcattt gcttggtaat cctatcaacg 240
rgcactaact tcttagtata ctttaaacac ttagttgggt aacactgaga ttttgttgtc 300
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aactgtaagt tctaggtaga ctaattggga gcagacacgg agttttagat gccttagcca 540
aacccagcag aaacctttca cacagccact catcgtaaga aacgcagatt tttctcttct 600
catgcttgtc tctggttccc tgcatttgta gtgacagaac tttcactagc aggatataaa 660
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aggagtggtg ccttcaaatg aatgtgacca ctccgtattg tggagtgact tccctagggc 780
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gccgtcttcc ttctggctta gcaggtgctg cagctgtact ctcgactcct gtctgtgnag 960
cgtganyagg gaaaatgagg agtggagtct atttccaaaa aaaaatgtgg atggagtttt 1020
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<210> 241
<211> 498
<212> DNA
<213> Homo sapiens

<220>

<221> misc feature
<222> (493)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (496)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (497)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (498)
<223> n equals a,t,g, or c

<400> 241
gagttgatcc tgagatgaag gtggagcgtt acaagcgcac ctttgaccaa aatgaggagc 60
tagggctcaa tgacatgaag acagagggct atgaggcagg cctggctccg caacggtagc 120
agtgggtggc tcaagggcca gcctccagcg ctgctctttc tgtaggttat ttattagtat 180
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gcctattgtg ttacttgacc ttattttgga agttttgaat tggcctagga ggaaacccag 360
aaatgaacca ggggtatgtc atcacttttt tcatatcaag tcctcaccct ccttccacat 420
aatgctctat cctctaargt tggaactctg aarttggaga argtggaata aagttacacc 480
tggaaaaaaa aanaannn 498

<210> 242
<211> 1784
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1739)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1777)
<223> n equals a,t,g, or c

<400> 242
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<210> 243
<211> 936
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (840)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (854)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (865)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (905)
<223> n equals a,t,g, or c

<400> 243
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gtagtcattt caacaggatt aactataatc tataattgat agattattga gtgacacaca 120
gcgtgatgct gggcaggccc caagctgaaa agcatctcct ccaacttact ttattcttag 180
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aaaanaaaaa caattttagc tggggcacaa tggctc 936

<210> 244
<211> 1381
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1348)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1349)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1350)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1358)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1359)
<223> n equals a,t,g, or c

<400> 244
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agagcaaaat cttgaaagtc attcgcaaaa acattgttaa gaagtgcctt gagctcttct 120

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atcatacctc ccagtctgga gatgagatga catctctgtc agagtatgtt tctcgcatga 300
aggagacaca gaagtccatc tattacatca ctggtgagag caaagagcag gtggccaact 360
cagcttttgt ggagcgagtg cggaaacggg gcttcgaggt ggtatatatg accgagccca 420
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c                                                                  1381

<210> 245
<211> 779
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (39)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (41)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (650)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (669)
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<223> n equals a,t,g, or c

<400> 245
cttttccttn caggtggaaa ggaccccttg gtacccatnc ncaagcagtt aggaaaggac 60
ctggctcttt acatatattg gatggtcctc atggcaaaac ttctcaattc cttaattagt 120
catgtctcag cttcaaggat atcagacagg aatgaaacac acttgaaaat gagattgacc 180
tggagatttt ttttccctaa tctctcatac cttaattgga aaaataatca attaattcta 240
tgttaattag grtatacaaa gttcaccctc cttgmaagtg actagggcaa gccctgaaga 300
tcttcctcac ctccttttat ctttctataa ccttgtctcc tccagcacca cagggaagac 360
aatcacagtg ggtcaagagc gaccctcttt cacgtgggct ctgcatgacc tctgagacct 420
gcttatgatc agtgcaatga agttagaagt aactgatgat tgggagcctt tgcagatagc 480
tgggcaaatg ggtgatttac ttatccccat tctaaatgga gtgagctctc tttgaggcta 540
agcaaggagg cgttgtatgc tagtttctag actttgcctg gagacccctt tggaaatctg 600
tcttcttttt aaactcactt aatatgcctt aatcatctgk gtgtaatggn agtcatccgc 660
tcctcaatnt aaccctyctm ccctggggct ttggctgtcc tcaatgagag tttcatgcag 720
aatggaaaat cctctatatg tacaatctct ctccccctca tttctcttcc tcctcacct 779

<210> 246
<211> 1231
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (795)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1219)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1229)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1230)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1231)
<223> n equals a,t,g, or c

<400> 246
ccacgcgtcc ggaagaaggc ctaattccta acctgggacc cagagagaga cataagatat 60
ccagagagat atgcaccaag aaactgcaat ttatacaaag acagtcagaa agcagctgaa 120
gacagaatga gagagaaact aagtaaaaga aacttgatgc ctccaaaatg aagagtatgc 180

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ctcatttcca tatgtgaact gaaaagctct ccacttttga aataaaggct tactatagag 240
cagccctggt aatagaacta caagacttat aataacttcc tgtttgagtt gaaatgaaaa 300
ctcataaaga atctatgcta ttaacccccct aatttatact tttgtattct tttatgttgt 360
attttgtatt ttatgttgga cttctttttt aaaattttgt atttattttt aattgaaaaa 420
taattgtgta tacttattgt tgtacaacat gatgttttga tatatgtata tgttgtagaa 480
tgactaaatc aagctagtta acatatgcat tacctcctat acttatcatt tatttgtggt 540
gagaacattt aaaatctact ctgttagcaa ttttgaagta tagaatacac tatgtcaact 600
ataatcatgg tgttgtacag taggtctaaa tgtattcatt tctcctatct aactgaaaat 660
ttgtatcttt tgaccaacat ctccctggtc cctccatctc ctcccctggt aactaccatt 720
attttttttt cttttttttta aaaaaaagct tttagtttcg agggtacacg tgtaggtttg 780
ttatatagat aaacncaagt catgggactg tgttgtacag attattttgt cgtccacgta 840
ctaagcctag tgcccaatag ttatttttttc tgctcttctc cctcctccta ccctctgcca 900
tcaagttggc ctaatgtcta ttgttccctt ctttgtaaca accactctaa tctctgcttc 960
taagggttcc tatgtctgac ttctttccct tgattttgtg agattcatcc acgttgtgta 1020
tgcagcagta gtttatttat tttcattatt ggatagtatt cctttgtgtg aacataaatt 1080
gctgatggca gatgtttgaa ttgtttccag tttttgagta ttatgaataa tgctgttgtg 1140
aacaaaaaaa aaaaaaaaaa aaaaaaaggg cggccgctct agaggatcca agcttgcgta 1200
cgcgtgcatg aaacgtcana agggtcttnn n                                1231
```

<210> 247
<211> 851
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (817)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (834)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (842)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (844)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (849)
<223> n equals a,t,g, or c

<400> 247

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gcggacgcgt gggcgtggat cggctggagc ggggccgccg ccggctgcag caggagctgg 60
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acgacgccac catggacctg gagcagcagc ggcagcttgt gagcaccctg gagaagaagc 120
agcgcaagtt tgaccagctt ctggcagagg agaaggcagc tgtacttcgg gcagtggagg 180
aacgtgagcg ggccgaggca gagggccggg agcgtgaggc tcgggccctg tcactgacac 240
gggcactgga ggargagcag gaggcacgtg aggagctgga gcggcagaac cgggccctgc 300
ggctgagctg gaggcactgc tgagcagcaa ggatgacgtc ggcaagagcg tgcatgarct 360
ggaacgagcc tgccgggtag cagaacaggc agccaatgat ctgcgagcac aggtgacaga 420
actggaggat gagctgacag cggccgagga tgccaagctg cgtctggagg tgactgtgca 480
ggctctcaag actcagcatg agcgtgacct gcagggccgt gatgaggctg gtgaagagag 540
gcggaggcag ctggccaagc agctgagaga tgcagaggtg gagcgggatg aggagcggaa 600
gcagcgcact ctggccgtgg ctgcccgcaa gaagctggag ggagagctgg aggagctgaa 660
ggctcagatg gcctctgccg gccagggcaa ggaggaggcg gtgaagcagc ttcgcaagat 720
gcaggcccag atgaaggagc tatggcggga ggtggaggag acacgcacct tccgggagga 780
gatcttctcc cagaatcggg aaagtgaaaa gcgcctnaag ggcctgaagc tgangtgctg 840
cngntgcang a 851

<210> 248
<211> 1802
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1680)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1747)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1757)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1800)
<223> n equals a,t,g, or c

<400> 248
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attcccaact cgatggatcc gaagtactgc tgctgactga tggggaggat aacactgcaa 120
gttcttgtat tgatgaagtg aaacaaagtg gggccattgt tcattttatt gctttgggaa 180
gagctgctga tgaagcagta atagagatga gcaagataac aggaggaagt catttttatg 240
tttcagatga agctcagaac aatggcctca ttgatgcttt tggggctytt acatcaggaa 300
atactgatct ctccsagaag tcccttcagc tcgaaagtaa gggattaaca ctgaatagta 360
atgcctggat gaacgacact gtcataattg atagtacagt gggaaaggac acgttctttc 420
tcatcacatg gaacagtctg cctcccagta tttctctytg ggatcccagt ggaacaataa 480
tggaaaattt cacagtggat gcaacttcca aaatggccta tctyagtatt ccaggaactg 540
saaaggtggg cacttgggca tacaatctty aagccaaagc gamcccagaa acmttaacta 600

ttacagtwac ttctcgagca kcaaaattct tctgtgcctc caatcacagt gaatgctaaa 660
atgaataagg acgtaaacag tttccccagc ccaatgattg tttacgcaga aattctacaa 720
ggatatgtac ctgttcttgg agccaatgtg actgctttca ttgaatcaca gaatggacat 780
acagaagttt tggaactttt ggataatggt gcaggcgctg attctttcaa gaatgatgga 840
gtctactcca ggtattttac agcatataca gaaaatggca gatatagctt aaaagttcgg 900
gctcatggag gagcaaacac tgccaggcta aaattacggc ctccactgaa tagagccgcg 960
tacataccag gctgggtagt gaacggggaa attgaagcaa acccgccaag acctgaaatt 1020
gatgaggata ctcagaccac cttggaggat ttcagccgaa cagcatccgg aggtkcattt 1080
gtggtatcac aagtcccaag ccttccttgc ctgaccaata cccaccaagt caaatcacag 1140
accttgatgc cacagttcat gaggataaga ttattcttac atggacagca ccaggagata 1200
attttgatgt tggaaaagtt caacgktata tyataagaat aagtgcaagt attcttgatc 1260
taagagacag ttttgatgat gctcttcaag taaatactac tgatctgtca ccaaaggagg 1320
ccaactccaa ggaaagcttt gcatttaaac cagaaaatat ctcagaagaa aatgcaaccc 1380
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ttgcacaagt aactttgytt atccctcaag caaatcctga tgacattgat cctactccta 1500
ctcctactcc tactcctgat aaaagtcata attctggagt taatatttct acgctggtat 1560
tgtctgtgat tgggtctgtt gkaattgkta actttatttt aagtaccacc atttgaacct 1620
taacgaagaa aaaaatcttc aagtagacct agaagagagt tttaaaaaac aaaacaatgn 1680
aagtaaagga tatttctgaa tcttaaaatt catcccatgt gtgatcataa actcataaaa 1740
ataattntaa gatgtcngga aaaggatact ttgattaaaa taaaaacact catggatatn 1800
ta 1802

<210> 249
<211> 444
<212> DNA
<213> Homo sapiens

<400> 249
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tgccccagaa cttcactggg cttccttcca taactatgga tctgtgagca tcactttaat 120
ttcagagtgt ggaagacacc ttaataagaa tcatgaatca cattttacaa atcaggatac 180
acaggatgta aggttaagtg acctgtccta tcagggccac aaagccagtt aaacttcttt 240
attaactgag tcacttaaaa atcatttatt taaaaaccta ttttgttcca ggaactattc 300
tgggtactgg aaatraaaac agtggagaca gagagagggg aaataaaaaa caagacaaaa 360
atgattgctt tkgtggagtt tatatattcc actggargaa ggtagatsat aaataaaagt 420
gaaaaagtac attatwaggt ggga 444

<210> 250
<211> 1746
<212> DNA
<213> Homo sapiens

<400> 250
ggcatcagta aggtctgtat ttaaatgtgg atgtagacat cataattacc aagacaagaa 60
attgttttga gaaattctct gatgtttttc ttcttcaggt ttcacgtgcc acgatcatgg 120
tgccacggta ctgcagtatg cacccaaaca gcaactccta atctcggggg gtaggaaaag 180
acacgtctgc atttttgaca tcargcaaag gcagctcatt cacacgttcc aggcccatga 240
ctcagctatt aaggctctgg ccttggatcc ctatgaggaa tattttacca caggttcagc 300
agaaggtaac ataaaggttt ggagattgac aggccatggc ctaattcatt catttaaaag 360
tgaacatgct aagcagtcca tatttcgaaa cattggggct ggagtcatgc agattgacat 420
catccagggc aatcggctct tctcctgtgg tgcagatggc acgctgaaaa ccagggtttt 480

gcccaatgct tttaacatcc ctaacagaat tcttgacatt ctataaagat tggggtttta 540
tttttatata catttcagtt aaaaggcaca ctacagtcat cactaggcaa ttctgctttc 600
taagcagttg tattgaaaac agagaatctc tgtgtagaat ttgaatatga cccaagctga 660
gtattatcta aacaggttgg tggaatgaat gcgcatgtac cttattatgc tgacatacta 720
aaaaaaataa aacctagtat tgtatgaagg atagctattc tttacagcat ttagcaaacc 780
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ataccaaatt aaggaagaaa atgttgctga tttgggtttt tcttcctgtt cttaccactg 900
actgaagcat gcctgcagtc tcctcctctg ttgaatgaag gataatcata aggtgtttgt 960
taggagcgct agaccacctg gaaaactttc ttagctgtgg agcagtgcgc agtgaccagt 1020
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gtggccagtt aatagttgat gagattggtg acattattta ttgccacagc ctattgtata 1440
aactatgcag agttaaatat ttgcttgtaa aatattagcc aatgttgtca ttattttgat 1500
gtatttcctt ggttatgacc aaaaatatgt tgagatactg aaactaatgt ctgtgtgttt 1560
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aatagtaaat acaatggcat aaaagtaact ttctctgaag atgtgatgtt caggctgtga 1680
aatatatatg taaaagaaaa ataaatgtta tttgttagaa aaaaaaaaaa aaaaaaaaaa 1740
ctcgta 1746

<210> 251
<211> 1935
<212> DNA
<213> Homo sapiens

<400> 251
gaattcggca cgagggagca ttgcccgtca gacagcaact cagagaataa ccagagaaca 60
accagattga aacaatggag gatctttgtg tggcaaacac actctttgcc ctcaatttat 120
tcaagcatct ggcaaaagca agccccaccc agaacctctt cctctcccca tggagcatct 180
cgtccaccat ggccatggtc tacatgggct ccaggggcag caccgaagac cagatggcca 240
aggtgcttca gtttaatgaa gtgggagcca atgcagttac ccccatgact ccagagaact 300
ttaccagctg tgggttcatg cagcagatcc agaagggtag ttatcctgat gcgattttgc 360
aggcacaagc tgcagataaa atccattcat ccttccgctc tctcagctct gcaatcaatg 420
catccacagg gaattattta ctggaaagtg tcaataagct gtttggtgag aagtctgcga 480
gcttccggga agaatatatt cgactctgtc agaaatatta ctcctcagaa ccccaggcag 540
tagacttcct agaatgtgca gaagaagcta gaaaaaagat taattcctgg gtcaagactc 600
aaaccaaagg caaaatccca aacttgttac ctgaaggttc tgtagatggg gataccagga 660
tggtcctggt gaatgctgtc tacttcaaag gaaagtggaa aactccattt gagaagaaac 720
taaatgggct ttatcctttc cgtgtaaact cggctcagcg cacacctgta cagatgatgt 780
acttgcgtga aaagctaaac attggataca tagaagacct aaaggctcag attctagaac 840
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ccactggctt ggagctgctg gaaagtgaaa taacctatga caaactcaac aagtggacca 960
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gacaacccta ttaatcattt ggtcttctaa aatgggatca tgcccattta gattttcctt 1560
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gtgagttttt aaattattgc tcactgccta tttaatgtag ctaataaagt tatagaagca 1680
gatgatctgt taatttccta tctaataaat gcctttaatt gttctcataa tgaagaataa 1740
gtaggtatcc ctccatgccc ttctgtaata aatatctgga aaaaacatta aacaataggc 1800
aaatatatgt tatgtgcatt tctagaaata cataacacat atatatgtct gtatcttata 1860
ttcaattgca agtatataat aaataaacct gcttccaaac aacaaaaaaa aaaaaaaaaa 1920
aactttgagg ggggg 1935

<210> 252
<211> 1919
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (253)
<223> n equals a,t,g, or c

<400> 252
ataaggcggc atttatcatt cccaccactg acatctactg tataccacat ctgctatgcc 60
atggatacat ggcatcatga tgatgagtcc ctcccctggg cctgccaagg ggaaacagag 120
tgcatatccc accataatag ggaaattaat aattgtatta agtggttgaa aaaaaggggg 180
aggatgttca ctcactgttc cctgtgtagt atcctgcaaa tgcatgaatg gtgaactccc 240
catgtcagca ttnttgtgcc catttattta gtacccagac atagtgctgg tctcacagct 300
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gggatataga attggcagag tggcagatgt tcacaattgt ctacaagtag atgtgctaga 420
caatggaagg atgcaggcca acctctttga ttacaattga gattcatgtg actattgagc 480
cctggaaatg tagcttgtcc aaattgagat gtgctgtcag tataaaatac ataccagatt 540
ttaaagatgt accaaaaaat gtaaactatc tcaattttta tattggtgaa atcaatatgt 600
cttggtatag tggcttaaat aaaacaattt tagcctttct cagtttattt ttctgcaaaa 660
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tggagaacct gacagaggac taagaagtta tctaatgtaa aagacctcag gcaccacctt 1620
cgcataaact ttttccagac aaggctaaat gtgcatgctt cataaccata attcttattt 1680

ttctttaata aatattttc tacttgtaac actgtgcatt atttcaaact gtttacctgt 1740
ttgtaaagct tgtctcttaa tcaaatttgt cttgaccaaa taagtttcct gagggctgga 1800
attatgcctt aactatatct atagtattta acagtgaatc ctttgtataa tgaaagcatc 1860
aacagataat tttaaattga taaataaaaa gcacagtttc aaatggtaaa aaaaaaaaa 1919

<210> 253
<211> 2468
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2076)
<223> n equals a,t,g, or c

<400> 253
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aggacaggag gtggccatta agcagatgaa tcttcagcag cagcccaaga aagagctgat 120
tattaatgag atcctggtca tgagggaaaa caagaaccca aacattgtga attacttgga 180
cagttacctc gtgggagatg agctgtgggt tgttatggaa tacttggctg gaggctcctt 240
gacagatgtg gtgacagaaa cttgcatgga tgaaggccaa attgcagctg tgtgccgtga 300
gtktctgcag gctctggagt tcttgcattc gaaccagata accccagagc agagcaaacg 360
gagcaccatg gtaggaaccc catactggat ggcaccagag gttgtgacac gaaaggccta 420
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cccagaactt cagaacccag agaagctgtc agctatcttc cgggactttc tgaaccgctg 600
tctcgagatg gatgtggaga agagaggttc agctaaagag ctgctacagc atcaattcct 660
gaagattgcc aagcccctct ccagcctcac tccactgatt gctgcagcta aggaggcaac 720
aaagaacaat cactaaaacc acactcaccc cagcctcatt gtgccaagcc ttctgtgaga 780
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aagagaactg caactgaatg actaatcaga tgatggccat ttctaaataa ggaatttcct 960
cccaattcat ggatatgagg gtggtttatg attaagggtt tatataaata aatgtttcta 1020
gtcttccgtg tgtcaaaatc ctcacctcct tcataaccat ctcccacaat taattcttga 1080
ctatataaat ttatggtttg ataatattat caatttgtaa tcaattgaga tttctttagt 1140
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gcttctagca gctgttcggg aggaccttga cccaayagtg ttcccatgct gtttcttgtg 1380
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gttgagaagt cggggaaaat ggtgactact tttagagcaa ggctgggcat cagcacctgt 1560
ccagctctac ttgtgtgatg tttcaggaac tcagcccctt tttctgccta ggataaggag 1620
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taaaaaaa 2468

<210> 254
<211> 2861
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2861)
<223> n equals a,t,g, or c

<400> 254
ggcacarcca cagcttctcc agtggctatg tggagatgga gtttgagttt gaccggctga 60
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tggagctgga gcccagaggc cagcagcccg tggccaaggc cgaggggagc ccgaccgcca 480
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<210> 255
<211> 766
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (107)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (709)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (722)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (732)
<223> n equals a,t,g, or c

<400> 255
aaagggggtc gagtaactca agtgttagaa gttcgttgac ttttgactgg ggagaaagga 60
accttaaact tggggaggag aagggagtcc tggagttgtt acctaanaac aaagatgggg 120
cggaatggag gctacagccc gaaagccagg ccagcagtgg cgttcttctg tgtccccaag 180
tagtggactt gagcccgctg agacctcggc aggagtctcg tcccagggca ggtgggtgtg 240
cggggtgagc cgcggagcgg ttccagctcg ggtaaagagg aagttacctc gggtcctttg 300
cactccaact cggcggcgcc cgagcccgag gggccccagc caacccgacg cccgtgtgtt 360
gtgtgtgtct aacacccggt ccgtgccrgc gccgcgccgc ccgcgctgcc cccagctcga 420
ggaggacatc gcggccaagg agaagttgct gcgggtgtcg gaggacgagc gggaccgggt 480

gctggaggag ctgcacaagg cggaggacag cctcctggcc gccgaagagg ccgcgccaag 540
gctgaagccc gacgtagctt ctctgaacag acgcatccag ctggttgagg aagagttgga 600
tcgtgcccag gagcgtctgg caacagcttt gcagaagctg gaggaagctg ataaggcagc 660
agatgagagt gagagaggca tgaaagtcat tgagagtcga gcccaaaang gatgaagaaa 720
anatggaaat tnaggagatc caactgaaag aggcaaagca cattgc 766

<210> 256
<211> 1394
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1238)
<223> n equals a,t,g, or c

<400> 256
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tctgttgcca ctctctctcc tgtcaatgat ggatctcaga aataccccag ccaaatctct 120
ggacaagttc attgaagact atctcttgcc agacacgtgt ttccgcatgc aaatcaacca 180
tgccattgac atcatctgtg ggttcctgaa ggaaaggtgc ttccgaggta gctcctaccc 240
tgtgtgtgtg tccaaggtgg taaagggtgg ctcctcaggc aagggcacca ccctcagagg 300
ccgatctgac gctgacctgg ttgtcttcct cagtcctctc accacttttc aggatcagtt 360
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gagagcattt tccgtgaagt ttgaggtcca ggctccacgc tggggcaacc cccgtgcgct 480
cagcttcgta ctgagttcgc tccagctcgg ggaggggtk gagttcgatg tgctgcctgc 540
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ccaaatctat gtcaagctca tcgaggagtg caccgacctg cagaaagagg gcgagttctc 660
cacctgcttc acagaactac agagagactt cctgaagcag cgccccacca agctcaagag 720
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tatagtgaca ggctgtgctc catattttac agtcattttg gtcacaatcg agggtttctg 1320
gaattttcac atcccttgtc cagaattcat tcccctaaga gtaataataa ataatctcta 1380
acaccaaaaa aaaa 1394

<210> 257
<211> 1329
<212> DNA
<213> Homo sapiens

<400> 257
ctcatcctca acctggtgac agacttgaag ccccagatgc tgttggacac agtgccctgt 60
atccccgcct acatcctcta catgtgcatc cggctcgcgg accaaaccaa tgatgatctc 120
aaggtgcmct ccctgmtgac ctccaccayc aacggcatta agraagtcct gaaraagcac 180

artgatgact ttgagatgac gtcattctkg ttatccaaca cctgccacct tcttcactgt 240
ctgaagcggt acagcgggga tgagggcttc atgactcaga atacwgcaaa gcacaacgaa 300
cactgyctta agaayttga cctcaccgaa taccgtcagt actgagcgac ctttccattc 360
agatctacca gcagctcwtt aaaattgccg agggygygtt acagccgatg atagtttctg 420
ccatgttgga aaatgagagc attcagggtc tatctggtgt gaagcccacy ggctmccrga 480
agcrctcctc cagcatggca gatgggata actcatacyg cctggaagct wtcatccgcc 540
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taaaagtaga tcaaatcaga gattgacagc ctgtggaggg tgctgaacta tacagaatta 1260
gacacaacta tgtcattatt ttttgtacct actgctcaga ataaaaacac ttgaaatatg 1320
aaaaaaaaa 1329

<210> 258
<211> 2196
<212> DNA
<213> Homo sapiens

<400> 258
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cggggccgac ccgaggccac agtgcctccg cggtagaccg gacttgggtg acgggctccg 120
ggctcccgag gtgaagagca tcgggggctg agggatggaa gggtctaaga cgtccaacaa 180
cagcaccatg caggtgagct tcgtgtgcca gcgctgcagc cagcccctga aactggacac 240
gagtttcaag atcctggacc gtgtcaccat ccaggaactc acagctccat tacttaccac 300
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gtccacagaa agtgccaaca gcttcactct gattggggag gcatctgatg gcggcaccat 480
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tgtaataaaa gatttgctgc agtctgaaaa ctgcccaggg gtgcactgtt gggtttttct 2160
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<210> 259
<211> 567
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (236)
<223> n equals a,t,g, or c

<400> 259
gtttacataa gagatccttt agtccactca acggctgaca ttagcagcat ctttaataca 60
actgtttgtt caaaggcaag gtggtccctt ttaaagttac acttctagac tcacctgttc 120
tcactccctg ttttaatgta acccagccat gagatgccag ataatagaat tgctacctac 180
tagctgaaca ggaaagaacc tgtgctgttt ctgacacttc ttgttgcaca tagatnaata 240
caatgggtat tatagagact cagttgcaga aattaacaaa catgctgctt ggttaaaatg 300
ggtagactca tctggctcat tctttattcc attttagttg gtttgcatct tgcctaaggt 360
gcatactcca aactyttggt attattctcc tgatagtcac actagtagtc tccctggtgt 420
gctataatct ctaaaagctt taaatgtttg cwtgcagcta tccatcgaat gtcaaatggt 480
ctctctttgg ctggaatgac aaaactcaaa ggaatgtgtg atcaggaaga catcataacc 540
tatgaatgat ggaacccaaa atgaatg 567

<210> 260
<211> 950
<212> DNA
<213> Homo sapiens

<400> 260
gactaatgaa ataactgttc actattgtgg gttctacttg cagggttcag actaggcaat 60
gtggtacatg ctatacaggc aactgagcag agcattcatg ccactgacct ggtacctcgc 120
ttatgcttaa cattagccaa cctgaaccgt gtgatttatt tcatctgtga caccatcctc 180
tgggtgagga gcgtaggtct cacctctggc atcaacaaag agaaatggcg aacgagggct 240
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cctctttggt tcagcgtggc tgaggaggwa acagaatggc tccaatcctt tctacttctt 420
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tggtgggaca gacatttgta taagtcacag gccatgtcat actgtgctta agttcttgtt 720
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ggagcatgaa gagttgtatg tttttggagt gctggagtga cttgtgaatt tctgaatatt 840
ttcccttcat ctaacattga ttgaacatct cttatgtgca tagtgggagc ttagtatttg 900
ctgaatgaat aaaaattgaa aggaaaaaat ttaaaaaraa aaaaaaaaaa 950

<210> 261
<211> 475
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (444)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (451)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (454)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (470)
<223> n equals a,t,g, or c

<400> 261
caaagaattc ggcacgaggt ctgatcttcc tgcggctgaa ccgcccggct gagccgacat 60
tgccggcgtc ttggcgattc ggcccgacga gctccgcttt cgctacagca tggtggccta 120
ctggagacag gctggactca gctacatccg atactcccag atctgtgcaa aagcagtgag 180
agatgcactg aagacagaat tcaaagcaaa tgctgagaag acttctggca gcaacgtaaa 240
aattgtgaaa gtaaagaagg aataatctac cctgactaaa gcttgaaatg ctacatttcc 300
aaggtgaaga tgtgtgggca catgttatgg cagattgaaa aggatctcat tccatgggaa 360
aaaaaaaaat cctgtcttgt tcataaattg acaatgtcaa taaattgaaa tatggttcac 420
tgttaaaaaa aaaaaaaaaa aaangggggg nccnttttaa agaatccaan tttac 475

<210> 262
<211> 1244
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1230)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1232)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1235)
<223> n equals a,t,g, or c

<400> 262
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aatttagatt aaatctcttg atgaacagtg tgtggttggc aaaatttcca agcactggac 120
tggaattttg agagaggcat ttacagacgc tgataacttt ggaatccagt tccctttaga 180
ccttgatgtt aaaatgaaag ctgtaatgat tggtgcctgt ttcctcattg acttcatgtt 240
ttttgaaagc actggcagcc aggaacaaaa atcaggagtg tggtagtgga ttagtgaaag 300
tctcctcagg aaatctgaag tctgtatatt gattgagact atctaaactc atacctgtat 360
gaattaagct gtaaggcctg tagctctggt tgtatacttt tgcttttcaa attatagttt 420
atcttctgta taactgattt ataaaggttt ttgtacattt tttaatactc attgtcaatt 480
tgagaaaaag gacatatgag tttttgcatt tattaatgaa acttcctttg aaaaactgct 540
ttgaattatg atctctgatt cattgtccat tttactacca aatattaact aaggccttat 600
taatttttat ataaattata tcttgtccta ttaaatctag ttacaattta tttcatgcat 660
aagagctaat gttattttgc aaatgccata tattcaaaaa agctcaaaga taattttctt 720
tactattatg ttcaaataat attcaatatg catattatct ttaaaaagtt aaatgttttt 780
ttaatcttca agaaatcatg ctacacttaa cttctcctag aagctaatct ataccataat 840
attttcatat tcacaagata ttaaattacc aattttcaaa ttattgttag taaagaacaa 900
aatgattctc tcccaaagaa agacacattt taaatactcc ttcactctaa aactctggta 960
ttataacttt tgaaagttaa tatttctaca tgaaatgttt agctcttaca ctctatcctt 1020
cctagaaaat ggtaattgag attactcaga tattaattaa atacaatatc atatatatat 1080
tcacagagta taaacctaaa taatgatcta ttagattcaa atatttgaaa taaaaacttg 1140
atttttttgt aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1200
aaaaaaaaaa aaaaaaaaag gggcggccgn tntanaggat ccaa 1244

<210> 263
<211> 1132
<212> DNA
<213> Homo sapiens

<400> 263
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gatacctaca gtttgatatt aaggcctttg ttgaaaataa tcctgccatt aaatggtgtc 120
ctactccagg ctgtgacaga gcagtaagac taacgaaaca agggtcaaat acatctggat 180
ctgatacact cagcttccca ttgctgagag ctcctgctgt tgattgtgga aaaggacacc 240
tcttctgctg ggagtgcctt ggtgaagcac atgagccttg tgactgccaa acatggaaga 300
attggctgca aaaaataacc gaaatgaaac cagaagaact tgtgggagtt agtgaagcct 360
acgaggatgc cgccaattgt ctctggttat taactaactc caagccttgt gccaactgta 420
agtctccaat acagaagaat gaaggctgca atcacatgca gtgtgctaag tgcaagtatg 480
acttttgctg gatttgcctt gaagagtgga aaaaacatag ttcgtccact ggaggttatt 540
acagatgtac tcgctatgaa gtcattcaac acgtggagga gcaatccaag gaaatgactg 600

tggaggctga gaaaaaacac aaacgatttc aggaacttga cagatttatg cactattata 660
caagatttaa aaaccatgag catagttatc agctagaaca acgccttctt aaaacagcca 720
aagaaaagat ggagcaattg agcagagctc tcaaagaaac tgaaggaggc tgtccagata 780
ccactttcat tgaagatgca gttcatgtgc tcttaaaaac tcggcgcatt ctcaagtgtt 840
cttatccata tggatttttc ttggaaccta aaagcacaaa gaaagaaatt tttgaactaa 900
tgcaaacaga cctagaaatg gtcactgaag accttgccca gaaagtcaat aggccttacc 960
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<210> 264
<211> 499
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (447)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (466)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (467)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (469)
<223> n equals a,t,g, or c

<400> 264
ggcacgagtg aagctgaagt actgcttcac ctgcaagatg ttccggccac cccgaacctc 60
acactgcagt gtctgcgaca actgtgtgga acgatttgac catcactgcc cctgggtggg 120
caactgtgtg gggagacgga actatcgctt cttctacgcg tttattctct ccctctcatt 180
cctgacggcc ttcatcttcg cctgtgtggt cacccacctg acgttgcgcg ctcagggaag 240
caacttcctc tccactctga aggagacacc agcaagcgtg ctgggagttg gtgatctgct 300
tcttctccat ctggtccatt ctgggcctct cagggtttca cacgtacctc gtcgcctcca 360
acctgactac taatgaagac atcaaaggtt cgttggtcca gcaagagggc ggtgagcctc 420
ttgtcaaccc tacagcataa agtattntca ccaatggcgg gtgggnntng ggccctaact 480
tccagctatt gacgggggg 499

<210> 265
<211> 735
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (648)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (713)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (730)
<223> n equals a,t,g, or c

<400> 265
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aaaggcagcc gctgcagtcg ccacaccttt gcccctgctg cgatgaccct gtcgccactt 120
ctgctgttcc tgccaccgct gctgctgctg ctggacgtcc ccacggcggc ggtgcaggcg 180
tcccctctgc aagcgttaga cttctttggg aatgggccac cagttaacta caagacaggc 240
aatctatacc tgcgggggcc cctgaagaag tccaatgcac cgcttgtcaa tgtgaccctc 300
tactatgaag cactgtgcgg tggctgccga gccttcctga tccgggagct cttcccaaca 360
tggctgttgg tcatggagat cctcaatgtc acgctggtgc cctacggaaa cscacaggaa 420
caaawtktca ktggcaggtg ggagttcaag tgccagcatg gagaagagga gtgcaaattc 480
aacaaggtgg aggcctgcgt gttggatgaa cttgacatgg agctagcctt cctgaccatt 540
gtctgcatgg aagagtttga ggacatggag agaagtctgc cactatgctg cagctctacg 600
cccaggctgt cgcagaacta tcatgagtgt gcaatgggac gcggcatnag tcatcacgca 660
acgccacgac agatctctca gcacaaagat atgtcctggt acgcaatgga acntgagata 720
accagtctan ctgtt 735

<210> 266
<211> 851
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (834)
<223> n equals a,t,g, or c

<400> 266
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tccagaagac ttgcatagcc atgtggtaaa tgagcatgca tgtaaattaa tagagttaag 180
tgataagtat aacaatggtg aacatggaca gtatagcctc ttaagcaaaa ttacctttga 240
caaatgtaaa aacttctttg tatgtcaagt atgtggtttt cggagtagac ttcacacaaa 300
tgttaacagg catgttgcta ttgaacatac aaaaattttt cctcatgttt gtgatgactg 360
tgggaaaggc ttttcaagta tgctagaata ttgcaagcat ttaaattcac atttatctga 420
agggatttat ttatgtcaat attgtgaata ttcaacagga caaattgaag atcttaaaat 480
tcatctagat ttcaagcatt cagctgactt gcctcataaa tgtagtgact gcttgatgag 540
gtttggaaat gaaagggaat taataagtca ccttccagtc catgagacaa cttgattatt 600

ctctttaact tacagaatgt tagtttaaaa taataaattc atccttttt tggagatgat 660
taaatggatg attgtaaaca caacttatga aatctgcctt taacaagtaa cttttttaaa 720
ttataaaatt ttattggcat tgctccattt tctgtatata aatatatctt taatgtggta 780
ttttcaaaaa aaaaaaaaaa aaaaaaatcc acgcggccgc gaattcccgg gtcnaacaag 840
ctcactaatc c 851

<210> 267
<211> 1257
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (51)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (118)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1213)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1217)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1238)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1245)
<223> n equals a,t,g, or c

<400> 267
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tcaaattcga acaggccaaa gtttcagcct gtatattgcg cgcaatcatc agcggacncg 120
gtgatgaagt gatcgaactg gcgaaaacaa atggctaagg taaaaagggt ggcatttccg 180
tcataataag gacatgccat gattgattta cgcagtgata ccgttacccg accaagccgc 240
gccatgctcg aagcgatgat ggccgccccg gttggggacg acgtttacgg agacgacccct 300
accgttaatg ctctgcagga ctacgcagca gagctttccg gtaaagaagc cgccattttt 360
ctgcctaccg gcactcaggc caacctggtc gctctgctca gtcactgcga acgcggcgaa 420
gagtatattg tcggtcaggc cgcgcataac tatctgtttg aagccggtgg cgcggcggtg 480
ctgggcagta ttcaaccgca acccatagac gcggctgccg acggcacgct accgctggat 540

aaagtggcga tgaaaatcaa acccgacgat atccatttcg cccgcaccaa attactcagt 600
ctggaaaaca cccacaacgg caaagtgttg ccgcgggaat acctgaaaga agcatgggaa 660
tttacccgcg agcgcaatct ggcgctgcat gttgacggtg cgcgcatctt taatgccgtg 720
gtggcttacg gctgcgaact gaaagagatc acgcaatatt gtgattcgtt caccatttgc 780
ctgtcgaaag gtcttgggac gccagtcggt tcattactcg tcggtaatcg tgattacatt 840
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gctgccgccg ggatatatgc cctgaaaaat aacgttgcgc gcttgcagga agaccacgac 960
aacgctgcct ggatggcgga cagctgcgtg aarcargcgc ggatgtgatg cgtcaggaca 1020
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tctcgcgcga acaactggcg gaagtcgccg cccactggcg tgcattcctg gcgcgttaag 1200
gagagaaacg ttncgcnaag cattttagtt ctccgtgnca attgntacat tgtcaac 1257

<210> 268
<211> 1085
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1067)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1081)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1083)
<223> n equals a,t,g, or c

<400> 268
gcaaaatttt agcatctctc aataatcata ctttttctct ttaattatca acaaaatatt 60
ttcatgttaa gctatctctt gcattcctag aataactcta cttgatcatg atgtttttttc 120
ttttaataat ggaattataa ataagtatac agtttttgta tgaaaatgtt tttatttctc 180
tggagcatgt acctatggat ggaattacta aatcatatgc tagttctgtg tttaactatt 240
tgaaggattg aaggagtgcc agattgtttt ccaaagtggc tgtaccattt tacattccta 300
cctgcagtgt atgaaggttt caatttctcc acatcctcac caatattatt atctgtcttt 360
ctgattgtag ccatcctagt gggtgtgaag tggatatctt gtgacttgga tttgattttc 420
cctgatggct aatgatattg aacatctatc tttctctgtg cttattggtc atttgtatat 480
tttctttgga gaaatgtcta ttccagatcc yttttctgtt tttaaaaaat arctttattg 540
aggtwtattt gacaaataaa aatttgktgt atatttaaaa tgtatttaaa agaaaattga 600
gagaaaggac tacagagccc cgaattaata ccaatagaag ggcaatgctt ttagattaaa 660
atgaaggtga cttaaacagc ttaaagttta gtttaaaagt tgtaggtgat taaaataatt 720
tgaaggcgat ctttttaaaaa gagattaaac cgaaggtgat taaaagacct tgaaatccat 780
gacgcaggga gaattgcgtc atttaaagcc tagttaacgc atttactaaa cgcagacgaa 840
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gtggaaaact ggaagacaga agtacgggaa ggcgaagaaa agaatagaga agatagggaa 960
attagaagat aaaaacatac ttttagaaga aaaaagataa atttaaacct gaaaagtagg 1020

aagcaraara aaaaaaaaaa aaaaaaaaaa aaaaaagggc ggccgcnctg gggccccagc 1080
ntncg 1085

<210> 269
<211> 1315
<212> DNA
<213> Homo sapiens

<400> 269
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atgcggagcc gccagctaag cggcacgcca cagcagagga ggtggaggaa gaagagaggg 180
accggatccc aggccccgtt tgcaagggaa agtggaaaaa taaggaacgg attctcatct 240
tttcttccag aggaataaat tttagaacaa gacatttaat gcaggacttg agaatgttga 300
tgcctcattc taaagcagat actaaaatgg atcgtaagga taagctattt gtgattaacg 360
aggtttgtga aatgaagaac tgtaataaat gcatctattt tgaagctaag aaaaaacagg 420
atctctatat gtggctttca aattcacctc acggaccatc tgctaaattc cttgttcaaa 480
atattcatac cctcgctgaa ctgaagatga ctggaaactg tttgaaaggt tctcggcccc 540
ttttgtcttt tgaccctgct tttgatgaat taccacatta tgctttgkta aaagaactct 600
taattcagat ctttagtaca ccacggtatc atcccaaaag ccaaccattt gtggaccacg 660
tgtttacttt caccattttg gataatagga tatggtttcg gaactttcag atcatagaag 720
aagatgctgc tcttgtagaa ataggacctc gttttgtctt aaatctcata aagattttcc 780
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<210> 270
<211> 2959
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2948)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2956)
<223> n equals a,t,g, or c

<400> 270
ccattcccgg gtcgacccac gcgtccgctg gaaatttgga ttctccagaa ggtggtttcg 60
atgccatcat gcaagttgca gtttgtggat cactgattgg ctggaggaat gttacacggc 120
tgctggtgtt ttccacagat gccgggtttc actttgctgg agatgggaaa cttggtggca 180

ttgttttacc aaatgatgga caatgtcacc tggaaaataa tatgtacaca atgagccatt 240
attatgatta tccttctatt gctcaccttg tccagaaact gagtgaaaat aatattcaga 300
caatttttgc agttactgaa gaatttcagc ctgtttacaa ggagctgaaa aacttgatcc 360
ctaagtcagc agtaggaaca ttatctgcma attctagcaa tgtaattcag ttgatcattg 420
atgcatacaa ttccctttcc tcagaagtca ttttggaaaa cggcaaattg tcagaaggmg 480
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gaaaatgttc caatatttcc attggagatg aggttcaatt tgaaattagc ataacttcaa 600
ataagtgtcc aaaaaaggat tctgacagct ttaaaattag gcctctgggc tttacggagg 660
aagtagaggt tattcttcag tacatctgtg aatgtgaatg ccaaagcgaa ggcatccctg 720
aaagtcccaa gtgtcatgaa ggaaatggga catttgagtg tggcgcgtgc aggtgcaatg 780
aagggcgtgt tggtagacat tgtgaatgca gcacagatga agttaacagt gaagacatgg 840
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<210> 271
<211> 2025
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (1339)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1916)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1944)
<223> n equals a,t,g, or c

<400> 271
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tctgactttt aataatggta ataggaaaac aaaacccaaa gcttttcaga acttcagtgt 120
gaggtttcct attttracaa gttaacttgt aaatactcag gttttacgat gtataattta 180
cctaatagac caaactaact catggagata ttttgaacta ttatttaggt acaaacttta 240
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tgaacatatt taaaatacat tttcacagaa tggatgaatt agttgtttct tcagagttac 360
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ggtttattta aatttttaaa atttgaaatt ttttatttgc aaaaaattgt tttatgcttt 480
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gaaatactct tacctttctg tccttgataa aatagtaaag aaaaccaaac aaacccaggc 1200
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ttaaaagtgc tgstatgaaw atttttggct ataaaatttt accctgactt gstttcaata 1860
actgttacgt aatgcagttt gatgttgtaa cctaacattc caaaaaaaaa attganaggg 1920
ggaatctcaa aatagtatat actncactaa cttgtttaca ggtgctgtat ttaaaagcat 1980

gcttctctct caaaaagaaa aattaaagga ttttattgcc aaacc 2025

<210> 272
<211> 852
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (767)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (769)
<223> n equals a,t,g, or c

<400> 272
ccacccgcca caaggcccag ctaattttg tatttttagt agagacaggg tttgattatg 60
ttggacaggc tggtctcaaa ctcctgactt caagtgatcc acccgcctcg gcctcccaac 120
gtgawgggac tatagacatg agccatcgtg cytggccttc ttgawtcttg aatacggggt 180
tttgaggtga aagcatttca tgaaaactta agttcataca caagagcatc atgaatattc 240
taaaagaggt atctgtgctt tttttgtgac cacaaaatat tacttcttat gaaatgttta 300
cactaggtga ggaaaagttc attaattacc tttaaaccgt tccttatttt ttttaagatt 360
ttaaattgta ttttggcttt tgcctccagt atcctttctg gttgctctgg tttgaattaa 420
gttcctatta tgctgcagca catatcaacc ttccctaagt aaccatttcc tggaatgtga 480
agcatcggtg ccattagcag accatatgca gaaatgtcgt gtacttgcat ttcttttttg 540
tgcactctat aaggctggtt gtgactcaga tcagcttaac tttttatatt atgttatttc 600
actaactgct acagtcaaaa tgatcaaatc tttgtacaat agaaaattat ttaaatttta 660
tttttctact gacatttcta attctagtgt aaatgtttat caataaaaaa ttactttcaa 720
ttctgagttg gaattatatt tctttttggt ggctaaatga ggttaancnt ttggaataaa 780
aaatgacttc aagttttcaa ttttttaaaa taacttaaaa atcttagcaa gggggaaact 840
ttttttaag gg 852

<210> 273
<211> 571
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (535)
<223> n equals a,t,g, or c

<400> 273
gcccaantac tttccagccc agtaaggggt atttcaggag agcagtccac tkaaggttct 60

ttccctttaa gatatgtgca ggatcaagtt gcggcacctt ttcagctgag taaccacact 120
ggccgcatca aggtggtctt tactccgagc atctgtaaag tgacctgcac caagggcagc 180
tgtcagaaca gctgtgagaa ggggaacacc accactctca ttagtgagaa tggtcatgct 240
gccgacaccc tgacggccac gaacttccga gtggtaattt gccatcttcc atgtatgaat 300
ggtggccagt gcagttcaag ggacaaatgt cagtgccctc caaatttcac aggaaaactt 360
tgtcagatcc cagtccatgg tgccagcgtg cstaaacttt atcagcattc ccagcagcca 420
ggcaaggcat tggggacgca tgtcatccat tcaacacata ccttgcctct gaccgtgact 480
agccagcagg agtcaaagtg aaatttcctc cttaacatag tcaatatcca tgtgnaacat 540
cctcctgaag cttccgtcca gatacatcag g 571

<210> 274
<211> 710
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (667)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (689)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (701)
<223> n equals a,t,g, or c

<400> 274
gtaagtttga gagcatctgc tggaaaacca ctagaatttg caaacggcca cctcaaaata 60
ctccagccag tcccactaag ccaaagacca gaatctgaga acagggatgg ggaaattatt 120
cctttctgtg gatgattatg cagctgggcc atgatttcac acccgggggc catgggctaa 180
gatggagggg aaggaaggaa tgtaatgtgt gccctctacc tcttcaccag gcatcatcct 240
ctcactggcc ctggctggca ttcttggcat ctgtattgtg gtggtggtgt ccatttggct 300
tttcagaagg aagagtatca aaaaaggtga taacaaggga gtcatttaca agccagccac 360
caagatggag actgaggccc acgcttgagg tccccggagc tcccggggca catccaggaa 420
ggaccttgct ttgggaccct acacacttcg gctctctgga cacttgcgac acytcaaggt 480
gttctctgta gctcaatctg caaacatgcc aggcctcagg gatcctctgc tgggtgcctc 540
cttgccttgg ggaccatggc caacccagag ccatccgatt cgatggatgg ggatgcactc 600
ttcagaccaa gccagcagga attccaaagc tgcttgctgt aaatgtgtga gattgtgaat 660
gggctgnatt ctggattcaa aaccagccng ctggtgggcc ntaaggttgg 710

<210> 275
<211> 595
<212> DNA
<213> Homo sapiens

<400> 275
taaaagagtg tcctaacagt ccccgggcta gagaggacta aggaaaacag agagagtgtt 60

acgcaggagc aagcctttca tttccttggt gggggagggg ggcggttgcc tggagagggc 120
cggggtcggg gaggttgggg ggtgtcagcc aaaacgtgga ggtgtccctc tgcacgcagc 180
cctcgcccgg cgtggcgctg acactgtatt cttatgttgt ttgaaaatgc tatttatatt 240
gtaaagaagc gggcgggtgc ccctgctgcc cttgtccctt gggggtcaca cccatcccct 300
ggtgggctcc tgggcggcct gcgcagatgg gccacagaag ggcaggccgg agctgcacac 360
tctccccacg aaggtatctc tgtgtcttac tctgtgcaaa gacgcggcaa aacccagtgc 420
cctggttttt ccccacccga gatgaaggat acgctgtatt ttttgcctaa tgtccctgcc 480
tctaggttca taatgaatta aaggttcatg aacgctgcga aaaaaaaaaa aaaaaaaatt 540
tgccctatca gtgagtcgga ttaattgtcc gcgcggccgg acatttagta gtagt 595

<210> 276
<211> 1172
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (119)
<223> n equals a,t,g, or c

<400> 276
tactatttat agctttagat agggcctccc ttcccctctt ctttctttgt tctctttcat 60
taaacccctt ccccagtttt tttttatact ttaaaccccg ctcctcatgg ccttggccnt 120
ttctgaagct gcttcctctt ataaaatagc ttttgccgaa acatagtttt tttttagcag 180
atcccaaaat ataatgaagg ggatggtggg atatttgtgt ctgtgttctt ataatatatt 240
attattcttc cttggttcta gaaaaataga taaatatatt tttttcagga aatagtgtgg 300
tgtttccagt ttgatgttgc tgggtggttg agtgagtgaa ttttcatgtg gctgggtggg 360
tttttgcctt tttctcttgc cctgttcctg gtgccttctg atggggctgg aatagttgag 420
gtggatggtt ctaccctttc tgccttctgt ttgggaccca gctggtgttc tttggtttgc 480
tttcttcagg ctctagggct gtgctatcca atacagtaac cacatgcggc tgtttaaagt 540
taagccaatt aaaatcacat aagattaaaa attccttcct cagttgcact aaccacgttt 600
ctagaggcgt cactgtatgt agttcatggc tactgtactg acagcgagag catgtccatc 660
tgttggacag cactattcta gagaactaaa ctggcttaac gagtcacagc ctcagctgtg 720
ctgggacgac ccttgtctcc ctgggtagga ggggggggaa tgggggaggg ctgatgaggc 780
cccagctggg gcctgttgtc tgggaccctc cctctcctga gaggggaggc ctggtggctt 840
agcctgggca ggtcgtgtct cctcctgacc ccagtggctg cggtgagggg aaccaccctc 900
ccttgctgca ccagtggcca ttagctcccg tcaccactgc aacccagggt cccagctggc 960
tgggtcctct tctgccccca gtgcccttcc ccttgggctg tgttggagtg agcacctcct 1020
ctgtaggcac ctctcacact gttgtctgtt actgattttt tttgataaaa agataataaa 1080
acctggtact ttctaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1140
aaaaagggcg gccgctcgcg atctagaact ag 1172

<210> 277
<211> 780
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (161)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (773)
<223> n equals a,t,g, or c

<400> 277
cgcggacaag gccaggctag ccttgagctc cgtcgggcag ggcgccggga ttggtgtccg 60
gcagagcgtg agccagcggt gcgamgtcgg cgagcgggag tgaaagaaga aaagctagag 120
agcgaaggca aagccgagga gagagggccg cggtcggcga nggaatctga ctgcacggtt 180
gcgtgcgctc acttccggag gctccctcag scgggcggct ccgstagtgg ctaaaggcaa 240
agcattccgg ggcgcggcgc atgaagttga gcttcgtccc tgctagccgc cgctttctcc 300
ccaaaaatac atcctagcct taatgtttat gcctccattg ccccagttct tatctgtttt 360
gctcaatgtc tcatagctac aagaaggcaa tttctgacga agccctccgt sccttccaaa 420
tggattattt tggcgggctt ycacccggac agtatgccac ccgaatgact ggacaagtgc 480
acgggagcgg ctgtcatttg cggagtgcgc cttgcgatct aggcgcctca cagcgmaayt 540
atccagtaat ttctctgaaa tcgatgctgg tttgttttcc caaggcaaat cagcagctta 600
tacagacatt ggggccacaa agccggtgga acaacgggag acggcttcct gagtgtcagg 660
tcctccaaga tgagcttaaa mttcgggtgg tgggcaggyt cgtaggcggg aaaggsccgt 720
gtccagatgr atgcaktcca tgtatatatt gatgaaagac acgtatacca ttnggtcaag 780

<210> 278
<211> 2375
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (920)
<223> n equals a,t,g, or c

<400> 278
cggcagcgna ccaagatggc ggcgccctgt gagggacaag cgtttgccgt agggttgaaa 60
agaattgggg tgcagtagtt cgctccccag aagggacccc ccagaaaatc cggcagctga 120
tagatgaggg gattgccccg gaagagggag gcgtggacgc gaaggacacg tctgccacat 180
cccagtcagt taatggatca ccccaagcgg aacaaccttc attggaatct acaagcaaag 240
aagccttctt tagcagagtg gaaacatttt cttctttgaa atgggcaggt aagccctttg 300
agctgtctcc actcgtctgt gcaaaatatg gctgggtcac agtggaatgt gatatgctca 360
agtgctctag ctgtcaagct ttctctgtg ccagtttaca accagctttt gactttgaca 420
gatataagca acgatgtgct gagctgaaga aagccttgtg tactgcccat gagaagttct 480
gtttctggcc agacagccca tccccagacc gatttgggat gttgcccctg gatgagcctg 540
ctattcttgt tagtgaattc ctagatcgtt ttcaaagcct ttgtcacttg gacctccagc 600
ttccttccct aaggccggag gacttgaaaa ctatgtgctt gacagaagac aagatcagtc 660
ttctcctaca cttgcttgaa gatgaacttg atcaccgaac tgatgagaga aaaactacaa 720
tcaaattagg ctcagacatc caagtccacg tcactgcctg tattctctct gtgtgtggct 780
gggcgtgtag ttcctctttg gaatccatgc agctctccct gatarcatgt tcgcaatgta 840

tgargaargt ggggctctgg ggcttccagc agattgaatc gtccatgact gacctggatg 900
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caagactcgt tgcttttggg ggatcatcag tttttgtggt agagaaggtg gaccctgaac 2280
tgcccactga taaagtaacc atgacctagc aaaggctaga aagtgattat tctctgatat 2340
ggccatgttt ttcgtcactg agattgtttc tcgtg 2375

<210> 279
<211> 2461
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (14)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1164)
<223> n equals a,t,g, or c

<400> 279
tttcaattct tggntttctg ttcccttcta ccaaaaccca gcataggact cagtgtacac 60
ttactttaaa acaaaaactc acatttctta gctgcaggtg atggcctcag tcattttaat 120
acagcctgga atgagtttgc ttattaccca gtcactttcg tagtgaatgt tcaaacccca 180
aagcaaatgt ttgcatctcc ttgtccataa aggagaaagc caggttatag gagaaagaga 240
gagaaaggcg catgtctgtt tgcacagaga gaggcaattt tgtctacctt tcgagaatca 300
gttataaaca gaagggcctc ttaggatttt gagctctcct gacaatgaag gaaaagctct 360
cttgagtata caagttccac actcattacc tttcagtggt gacccatcac ccactacaat 420
ttgttgaagg aagggagtgt cagagatatg ctttaaagtt gtactttagg ctgaaattct 480

ctctgtattt ggacctgcag atgttgtgta cagaaccgat gcatggcagg gtcaggaagc 540
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ggaatgtgtt tgtgtcacca gcagcaggca tttccctgtc ctccccaccc ccagtctcca 660
catccccagc agcctcttcc agaagcatgt cagggagacg gacaggtgct ctccttctcg 720
tgcaccacat ccaagtccac ccaccgtgga cgcagtgtga ctaaatgctg gccttgaaga 780
gaaaccctca gccagcttgt ctgttgtcca ggtccctcag tgtctctggt ttccctgccc 840
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gcagctgatt ttaacaataa ctactgtgtt cctggcaata gtgtgttctg attagaaatg 2040
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tctaccttga ggtcttttga catgtggaaa gtgaatttga atgaaaaatt taagcattgt 2340
ttgcttattg ttccaagaca ttgtcaataa aagcatttaa gttgaatgcg aaaaaaaaaa 2400
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaagggcggc cgctcgcgat ctagaactag 2460
t 2461

<210> 280
<211> 2520
<212> DNA
<213> Homo sapiens

<400> 280
accacttgca ctccagcctt gaacagagtt aggatcctgt caaaaaagaa aagaaaaaga 60
aagcagcatt caaatgtaag acaactgtaa aatattgagc cccacttggt ctaaaattca 120
aaaagaagaa cgcctgtcca tcgccttttt ataagtcctt ctctccacac ctaaaagcag 180
ctgcagctgg aagggcacaa attccactgt gtaaaataaa atattagggg caacacactt 240
catcaaggca gcaggaatga gagagagcag agaagatcaa ggatgaagtc ttgggtactg 300
aaaaattcag tgctgggcag aaaaactgac agggcagtac aagtaacaaa cagaatccaa 360
gtggggtggc ccttgtgcac agagctccag gtgacctctg gagagacatg ggcattcaca 420
tggaaagcta aaacggaagc tcaagtttca tactcaacat aatcttctgt gtgacaaagg 480
acaagccatg tagcctctct gtgcctattt cttcatgcat aaactgggac tcataatatt 540
tgtaaaatgt attgatactc tcagggcaaa ttcactatat tgctatacag ttgagatcag 600

tgttgtaaaa ttaaactgat ctggttctaa ttgcctcaaa ggccaaagcc caggcatttg 660
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gaatgaaaat ctgtgacaaa cagcgtcagt gtggccatgt ccacattcct acatgtctct 1140
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cttgattcca gatgagctct ggtcttatct ggatgctcag ataagaggtt tctatctgag 1260
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aatgcaacat ctattgaaaa aaagtggggt gtatgcatgt ggtttaattc cagattgctt 1860
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tggagtgcaa tgaactgagt caatatggca aggtgtatgt gatctgtggg agttatgcca 2040
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agaagatgca gaattctgtt ggtgtgcaaa aagtatagcc ttacattcaa gcagaatgga 2160
tctgaagaaa gcagcaatat ctgttactag agaacattcc catgtgttta aactcttcac 2220
ttcttagatg catttaaatt cttaatgcaa atgacgtagc aatttgaaaa cttctccgta 2280
ttacttgtgt ttaaaatgtc ttgctttaaa tacaaaacaa atggtaaagg ggattatctt 2340
ttgtttagat ggttaaatat tatttttgcc ttagatagct ttgtaataat ttttctccag 2400
acagttcaac acttttgaaa aatgacatga attttcatta aaaacccttt tcctatgttt 2460
attgtataca agaattatgc aataaaattt ctttataaaa ataaaaaaaa aaaaaaaaaa 2520

<210> 281
<211> 1448
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1427)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1432)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1440)

<223> n equals a,t,g, or c

<400> 281
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ccaagttccg gccagttcga cctcgaggat ccagaggtgg agacggtact acctcccagc 120
tctgttttcc atccccttca ggtccttcct cgggaggcgg cgaaggcggt ccaccctgcg 180
cgtgatcctt yatgcccggc ccctgcccct ccctccgggt ggaacttccc cctcaccgcc 240
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gcacactggg cagaagatgc ctctgattgg tctgggtacc tggaagagtg agcctggtca 420
ggtaaaagca gctgttaagt atgcccttag cgtaggctac cgccacattg attgtgctgc 480
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<210> 282
<211> 827
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (725)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (800)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (814)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (815)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (817)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (819)
<223> n equals a,t,g, or c

<400> 282
gcggacgcgt gggcggacgc gtgggtccaa gggaccccaa agctccaggg cagtttgggc 60
gtcctgtagt tgtcccccat ggaaaggaga aggaggcaga aagaagatgg aaagaaggaa 120
acttcaatgt ctaccttagc gatttgatcc cagtggatag agccattgaa gacaccagac 180
ctgctggatg tgcagagcag ctagttcaca ataacctccc aaccaccagt gtcatcatgt 240
gctttgtgga tgaagtgtgg tccactctcc tgagatctgt tcacagtgtc atcaatcgct 300
ctcctccaca cctcatcaag gagattctgc tggtagatga cttcagcacc aaagactatc 360
taaaagataa tttggataaa tacatgtccc agtttccaaa agttcggatt cttcgcctca 420
aagagagaca tggcttaata agggccaggc tggcaggagc acagaatgca acaggtgatg 480
tgttgacatt tttagattct catgtggaat gtaacgttgg ttggttggaa cctcttctgg 540
aaagagttta tttaagtaga aagaaagtgg cctgtccagt aatcgaagtc atcaatgata 600
aggatatgag ttacatgaca gtggataact ttcaaagagg catctttgtg tggcccatga 660
actttggttg gagaacaatt cctccagatg tcattgcaaa aaacagaatt aaagaaactg 720
atacnataag gtgccctgtc atggctggtg ggattggttt ctattgccaa aagttacttt 780
ttttgaactt ggaacatacn aacccttggc cttnnangnt ttggggg 827

<210> 283
<211> 524
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (518)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (524)
<223> n equals a,t,g, or c

<400> 283
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gatcaggcca ttggcctcct cgtggccatc ttccacaagt actccggcag ggagggtgac 120
aagcacaccc tgagcaagaa ggagctgaag gagctgatcc agaaggagct caccatkggc 180
tcgaagctgc aggatgctga aattgcaagg ctgatggaag acttggaccg gaacaaggac 240
caggaggtga acttccagga gtatgtcacc ttcctggggg ccttggcttt gatctacaat 300
gaagccctca agggctgaaa ataaataggg aagatggaga caccctctgg gggtcctctc 360

tgagtcaaat ccagtggtgg gtaattgtac aataaatttt ttttggtcaa atttaaaaaa 420
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 480
aaaaaacaaa aaaaaaaaaa aaaaaaaaaa aaaaaaanac aaan 524

<210> 284
<211> 613
<212> DNA
<213> Homo sapiens

<400> 284
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cgtagaagac gccctcacct atctggacca ggtgaagatc cgctttggca gcgaccctgc 180
cacctacaac ggcttcctgg agatcatgaa ggagttcaaa agccagagca tcgatactcc 240
tggagtcatc agacgtgtct cgcagctctt ccacgagcac cctgacctca ttgttggatt 300
caacgctttt cttcccctcg gatatagaat agacattccc aagaatggca agttaaacat 360
acagtcgcct ctgacaagcc aggagaattc gcacaaccac ggggacggtg cagaggactt 420
caagcagcag gtgccgtwta aagaggacaa accccaggtg cccctggagt ccgattccgt 480
ggaattcaac aacgccatca gctatgtgaa taagattaaa acccgcttct agaccaccca 540
gaaattacag gtcattcctg gagatctgca cacstwccar aargarcarc tgaacacgag 600
gggccggcca ttc 613

<210> 285
<211> 533
<212> DNA
<213> Homo sapiens

<400> 285
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acctgcgaca gcgggtagca caggcctttc gggagggaga gaatacccag gttgcagagc 180
ctgaggcctg tgatcagatg tacgagagct tagcgcgact ccattcaaac tactacaaac 240
acaagtaccc tcgccccaga gacaccagct tcagtggcct gtcgttggaa gagtacaagc 300
tgatcctgtc cacagacacc ttggaagagc ttaaggaaat agataaaggc atgtggaaga 360
aactgcagga gaagtttgcc cccaagggtc ctgaggagga tcataaggcc tgagctcagg 420
ccttacctcg tgcacatacc taggtgtgga gtcttgtaca ttgccatcgt caataaaact 480
gccccagttt ccccttgaaa aaaaaaaaaa aaaaraaaaa gaaaaaagtc gac 533

<210> 286
<211> 2071
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (303)
<223> n equals a,t,g, or c

<400> 286
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aaataaaaag aggacccaga aggagatgga gcatgccatg ctaatccggc acgacgagtc 120

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cmcccgagag ctagagtaca ggcagctgca cacgttacag aagctacgca tggatctgat 180
ccgtttacag caccagacgg aactggaaaa ccagctggag tacaataaga ggcgagaaag 240
agaactgcac agaaagcatg tcatggaact tcggcaacag ccaaaaaact taaaggccat 300
ggnaatgcaa attaaaaaac agtttcagga cacttgcaaa gtacagacca aacagtataa 360
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gacactgaaa gatgagcaga caagaaaact tgccattttg gcagagcagt atgaacagag 480
tataaatgaa atgatggcct ctcaagcgtt acggctagat gaggctcaag aagcagaatg 540
ccaggccttg aggctacagc tccagcagga aatggagctg ctcaacgcct accagagcaa 600
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taaagattga aaatttgata cattttacag aaactaattg tgatgtacat atcagtggtg 1440
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aagaacctgc tggcaagagt ttaacttgtc ttcagcatat tctgattgta tcataatcat 1560
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aaaaaaaaaa ggctttactt cttttgcatg cactttaaaa acaaaacaaa acatttttca 1980
ggttccaagg aaragcatga taactgtcag agcttttaat tatatttgta aataaaagtg 2040
ttcatcacaa aaaaaaaaaa aaaaaaaaaa a                                2071
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<210> 287
<211> 1966
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (56)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (788)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (1753)
<223> n equals a,t,g, or c

<400> 287
gaactagtct cgagtttttt ctgtctagct ccgaccggct gaggcggcgc ggcagnggag 60
ggacggcagt ctcgcrcggc tactgcagca ctggggtgtc agttgttggt ccgacccaga 120
acgcttcagt tctgctctgc aaggatatat aataactgat tggtgtgccc gtttaataaa 180
agaatatgga aactgaacag ccagaagaaa ccttccctaa cactgaaacc aatggtgaat 240
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cagacagcag tggccccgag cgcatattga gtatcagtgc tgatattgaa acaattggag 480
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caaccagcca gctcccgctc gaatctgatg ctgtggaatg cttaaattac caacactata 600
aaggaagtga ctttgactgc gagttgaggc tgttgattca tcagagtcta gcaggaggaa 660
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gctgccaaaa ccacttgtta aaaattgtac agagcctgta ggaaaatata gaaggttcca 1860
ttgggatgtt ggcctagttc tgtgtgggaa gacttagtgg attttgtttg tttttagata 1920
actaaatcgg ccaacaaatc accgttctgg cctatgggac cgggcc 1966

<210> 288
<211> 869
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (869)
<223> n equals a,t,g, or c

<400> 288
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agctgggccc tgtggtagga ggctggtaca aggttttgga tcggttcatc cctggcacca 120

ccaaagtgga tgcactgaag aagatgttgt tggatcaggg gggctttgcc ccgtgttttc 180
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tatcaacttt acacccatat cccagcaaat gccactcatc cccactcttc atagacacat 720
ttgttactct aaccctgcct aggcttcttg tagctccagc tctttagaga ctcccggaac 780
cctttatatg gtgcctcagt aaatatgtta ttaaatatgt aatccggaaa aaaaaaaaaa 840
aaaaaaaaaa aaaaaaaaaa aaaaaaaan 869

<210> 289
<211> 1105
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (34)
<223> n equals a,t,g, or c

<400> 289
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gttttctcag attaacaaat atgatggatt ccatggctga ccttggtgct taaaccagga 360
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ttaaactgga tatatacttt gagccttact taattcacag ataagttgac ttaactcagt 480
atttttattt caattaatga aaacagtcct cttttcaacc ccaggttgct tacattttgc 540
tggtctcccc aagtgaccat tggtggagac caattaatga aggaatgaaa ttcactttat 600
tgggactgtg gtattcaaca gagccacact taaccacttt ttccaatgaa gaatctccag 660
aatgataatg cccaaatatg gatggccaar aagaatttgt atctacggtg tgctttatgt 720
gtttttgaca ctgctgtatt ctgtgtgatc aagtgatttg sagctggttc caatgtkact 780
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gttccagagg tacaaacctc caata 1105

<210> 290
<211> 1982
<212> DNA
<213> Homo sapiens

<400> 290

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gctgggatga gatcctcgaa gctgtgtttt aacaaactcc actggagagt cccatattcc 180
ctcaaatttg ggaatcacga ccctgaacca ggttgggcct gaagcagtca actgaattca 240
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atttgatatt ttagtatttt ggtgtaaaag ccaacaggca aactttgcca ggtactgtgt 480
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cagatagctg gaagagatct tcgagggaaa gtaagttccc taaagtcaca tctatgtctc 600
ctagctcagt gttctttgtc attgtgtgtg tgtgtgtgtg tgtgtgtgtg tgtgtgtgat 660
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cattgttaac ttcctaaaac agaatttgaa ctttatcaac ctcaacgtgt atataaacta 1860
gatagtcctc aatactttat caacctcaac atgtatataa actagatagt cctcaaatac 1920
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aa 1982

<210> 291
<211> 2329
<212> DNA
<213> Homo sapiens

<400> 291
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acaaaacagc aaacttcagg taactatttt ggattgcaaa caggataatt aaatgttcaa 420
acaatctgat aaaataacca tttggaaact gcttggcctt ctgttctttt atttgattga 480
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<211> 2424
<212> DNA
<213> Homo sapiens

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<222> (666)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (1757)
<223> n equals a,t,g, or c

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<212> DNA
<213> Homo sapiens

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<211> 1257
<212> DNA
<213> Homo sapiens

<400> 294
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<211> 1117
<212> DNA
<213> Homo sapiens

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<211> 468
<212> DNA
<213> Homo sapiens

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<210> 297
<211> 464
<212> DNA
<213> Homo sapiens

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<222> (80)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (458)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (461)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (464)
<223> n equals a,t,g, or c

<400> 297
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<211> 2630
<212> DNA
<213> Homo sapiens

<400> 298
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<211> 1422
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

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<221> misc feature
<222> (1398)
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<220>
<221> misc feature
<222> (1401)
<223> n equals a,t,g, or c

<400> 299
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aaggnaract tgggatgttg ggtcaagagg ggaaagtgtt agtcaatcca ctttggagca 1260
atatcatgaa ggtcaattat aattccatat acctttcttt gatgccacag tcagagatag 1320
atacagttgg gtggccatgg gtgtgcccat acagacaatt tttggtnaat tgtttcagac 1380
nttcaggtct gagactgnca ntgctggggg gcctcctggg tt                    1422
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<210> 300
<211> 553
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (484)
<223> n equals a,t,g, or c

<400> 300
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aagtacagag cagtcaccat ctgatcttcc tcaaaggara acagaagttg tgagttcttc 120
tgcaaagtct gggagtcttc agactggttt gcctgaatct tttcctttaa ctggtggtac 180
tgaaaatttg aatacagaaa caactgatgg ctgtgtagca gatgcactgg gagcagcctt 240
tgccacaagg tcaaaagcac aaaggggaaa ttccgtggag gagcttgaag agatggatag 300
tcaagatgct gagatgacta acacaactga gccaatggat cactcttgat ttaattagag 360
gctaataaag gcagaatgtt tattgtgaat atgtaatatt tgttggctgg gccacgtaac 420
ttgattagtc attaaaaatc ttgtacgtat ataaaaagat tatatcttgt tattcagtgc 480
atgntagcaa gtgtgtgatt ggccatagct tttaatatac tgctgcccag gctggctctg 540
aatttctata aat 553

<210> 301
<211> 464
<212> DNA
<213> Homo sapiens

<400> 301
ctcaaaaatc accagaaaac tcatactagt gaaaaatcct ataaatgtaa tgaatgtaga 60
aaggccttta gttactgctc tggtcttatt caatgtcagg tcattcatac tatagaaaaa 120
ccttatgaat acggtaaatg tggcaaagcc tttaggcaga ggacagacct taaaaaacat 180
cagaaaatgc ataccgarga gaaaccctat gaatgtaatg aatgtgggaa agcctttagc 240
cagagcacat atcttacaaa acaccaaaaa attcatagtg aagagaaatc aaatatacat 300
actgagtgtg gggaaaccwt twgrcaaaac tcttcttttt tacaacaata aaaacctcac 360
actggagaga ttctctgaat gccttaagaa tttggttaat atggagaccc ttcccagggg 420
aaccagaagg aggatcgtga aaacctgttg actacttaga tgat 464

<210> 302
<211> 2018
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1997)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2012)
<223> n equals a,t,g, or c

<400> 302
gccacatccc ggcagccctc ctacckgcgc acgtggtgcc gccgctgctg cctcccgctc 60
gccctgaacc cagtgcctgc agccatggct cccggccagc tcgccttatt tagtgtctct 120
gacaaaaccg gccttgtgga atttgcaaga aacctgaccg ctcttggttt gaatctggtc 180
gcttccggag ggactgcaaa agctctcagg gatgctggtc tggcagtcag agatgtctct 240
gagttgacgg gatttcctga aatgttgggg ggacgtgtga aaactttgca tcctgcagtc 300
catgctggaa tcctagctcg taatattcca gaagataatg ctgacatggc cagacttgat 360
ttcaatctta taagagttgt tgcctgcaat ctctatccct ttgtaaagac agtggcttct 420
ccaggtgtaa stgttgagga ggctgtggag caaattgaca ttggtggagt aaccttactg 480
agagctgcag ccaaaaacca cgctcgagtg acagtggtgt gtgaaccaga ggactatgtg 540
gtggtgtcca cggagatgca gagctccgag agtaaggaca cctccttgga gactagacgc 600
cagttagcct tgaaggcatt cactcatacg gcacaatatg atgaagcaat ttcagattat 660
ttcaggaaac agtacagcaa aggcgtatct cagatgccct tgagatatgg aatgaaccca 720
catcagaccc ctgcccagct gtacacactg cagcccaagc ttcccatcac agttctaaat 780
ggagcccctg gatttataaa cttgtgcgat gctttgaacg cctggcagct ggtgaaggaa 840
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gctgctgttg gaattccact cagtgaagat gaggccaaag tctgcatggt ttatgatctc 960
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tctgccctcc gagacctcat cgtagccacc attgctgtca agtacactca gtctaactct 1380
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gtgctttcga tgaagtttaa aacaggagtg aagagagcag aaatctccaa tgccatcgat 1560
caatatgtga ctggaaccat tggcgaggat gaagatttga taaagtggaa ggcactgttt 1620
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attttaccac acactgtttt ttggcttgct tatgtgtagg tgaacagtca cgcctgaaac 1920
tttgaggata actttttaaa aaaataaaac agtatctctt aatcactgga aaaaaaaaaa 1980
aaaaaaaaaa aaaaccncgg gggggcccc gnacccca 2018

<210> 303
<211> 658
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (621)
<223> n equals a,t,g, or c

<400> 303
gacatttagg aacaattgca cttttaaagg gagagaatgc atagttgctc acatatctca 60
gtgtcagtca cctaacatgg atcagtgctt tatttgagat tacaaaacta gaaaatgacg 120
gagtcaaggc taggaccaat attctgttca gtcttagata attatagaat acacattaaa 180

atcagatatt tgaattttct taattttgta actatttgtc attgaaagga gatactaaaa 240
aaattatata tcgtcctaga aagtacatga actaataatg catttctaaa ggtgaaaaaa 300
gaataggtat ttttctgttt aatattcaat ttatagagag tagtacgtta atttttttaa 360
accccagaag ctcaggatct tatcatttta aaagaaatta tcaccagttc tgtgtgagta 420
aataaagtat tataacactt tgttttttca tccatgatac cttgtattta cttacctgag 480
cttttttttct agggaaagaa aaatgctcag gtaataacag agccttgaaa aattkggatt 540
ttcaaaacta cctatttatg tataggcctt tagatcatct gatgttgaat actctttaag 600
tgatctaaag gcctacatat naaaaggtat ttttattaaa ttctggatta aacatttc 658

<210> 304
<211> 671
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (524)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (593)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (657)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (659)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (671)
<223> n equals a,t,g, or c

<400> 304
tttacttaat cttgcctagt cacaaaataa gatgtgcacc catggtttgg agagttccta 60
tattagctga gcagtgagat acactatttc caaacggtgc acacctacag tagctttgga 120
aatgagccaa tcactgtttt acttaatggt tcttatcagc atgcaaatat tgcttgaaag 180
ttatttcctt attcactgtt ttgttagtcc attttgttag gaaacattaa ttcctaaaaa 240
tttgttcaga ataattaaaa gtgaacattt ggtgctgata ctcaaaaacc tacaaatgta 300
gccatttaaa aagtaacatg tttttctccc ctgctcattg cctgggagaa tggaatttta 360
tataactacc tttctttgca aaaataacgg tcgtgtcgag ttggtggtga ttttggcatt 420
ccatcttgca ctggtttcta gtataggctt agaaataatt ggcaggtaat aatctttcca 480
gtcaagttgc aagggatgct tatttctctt caaaaaaaga catnctgcgg gattgagtag 540
aaaatttagg tcagtttggg agcttatttg aatattttct actacattgg agntagcagt 600
ctttttctgg atcagatcag tgcatggtta tctacagggt gaatgcttct tggtggngna 660

agatctagct n 671

<210> 305
<211> 1680
<212> DNA
<213> Homo sapiens

<400> 305
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agcccaacag ctgttctgtt ctatctaccc ctcatttcac gctcaaggag tcatacctag 120
aatagttaca cacaagaggg aaactggaag ccaaacactg tacagtattg tgtagaaagt 180
cacctcccta ctccttttat tttacatgag tgctgatgtg ttttggcaga tgagctttca 240
gctgaggcct gatggaaatt gagataacct gcaaagacat aacagtattt atgagttata 300
tcttagttct tgaaattgtg gaatgcatga ttgacaatat atttttaatt tttatttttt 360
caagtaatac cagtactgtt taactatagc cagaactggc taaaattttt atattttcag 420
agttgaagtt ggtgaagaca ttcatgattt aaacaccaga tcctgaaagg ggttaaatct 480
actttgaaat gaatctgcaa tcagtatttc aaagcttttc tggtaatttt agtgatctta 540
tttgattaga ctttttcaga agtactaaat aaggaatttt aacaggtttt tattaatgca 600
cagataaata gaagtacagt gaggtctata gccattttat taaaatagct taaaagtttg 660
taaaaaaatg aatctttgta attacttaat atgttagtta agaacccgtc aagcttatat 720
ttgctagact tacaaattat tttaaatgca tttatctttt ttgacactat tcagtggaat 780
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tgtcataaaa acaatcactt ggttggttgt attgtagcta ttacttatac agcaacattt 1380
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tgactgtatt aatattttag tgctataaaa tactatgtga atctcttaaa aatctgacat 1500
tttacagtct gtattagaca tactgttttt ataatgtttt acttctgcct taagatttag 1560
gtttttttaaa tgtatttttg ccctgaatta agtgttaatt tgatggaaac tctgctttta 1620
aaatcatcat ttactgggtt ctaataaatt aaaaattaaa cttgaaaaaa aaaaaaacga 1680

<210> 306
<211> 782
<212> DNA
<213> Homo sapiens

<400> 306
gaattcggca cgagtgaagc attagaatga ttccaacact gctcttctgc accatgagac 60
caacccaggg caagatccca tcccatcaca tcagcctacc tccctcctgg ctgctggcca 120
ggatgtcgcc agcattacct tccactgcct ttctccctgg gaagcagcac agctgagact 180
gggcaccagg ccacctctgt tgggacccac aggaaagagt gtggcagcaa ctgcctggct 240
gacctttcta tcttctctag gctcaggtac tgctcctcca tgcccatggc tgggccgtgg 300
ggagaagaag ctctcatacg ccttcccact ccctctggtt tataggactt cactccctag 360
ccaacaggag aggaggcctc ctggggtttc cccagggcag taggtcaaac gacctcatca 420
cagtcttcct tcctcttcaa gcgtttcatg ttgaacacag ctctctccrc tcccttgtga 480

tttctgaggg tcaccactgc cagcctcagg caacatagag agcctcctgt tctttctatg 540
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ggggcccctt tggctctccc tcactctctg aggctccagc tggtcctggg acatgcagcc 660
aggactgtga gtctgggcas gtccaaggcc tgcaccttca agaagtggaa taaatgtggc 720
ctttgcttct gttaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 780
aa 782

<210> 307
<211> 1791
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (487)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (515)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1769)
<223> n equals a,t,g, or c

<400> 307
ggggattgtt cctgaaacat tcacgctgtc caatctccca catttcagaa ttggtgggag 60
tgtgcatttg attgttaata accagctggg ttacaccact ccagctgaaa gaggaaggtc 120
ttctttatac tgcagtgata ttgggaagct tgtgggctgt gccatcatcc atgtcaatgg 180
agacagccca gaggaagtgg tccgtgccac acgactggct tttgaatacc aacgccagtt 240
ccgcaaggat gtgattattg atctgttgtg ctacaggcag tggggccaca atgagctgga 300
tgagccattc tacaccaacc ccatcatgta caaaatcatc agagctcgaa agagcattcc 360
agacacatat gcagagcacc tcattgctgg cggactcatg acgcaggagg aggtgtctga 420
aataaaatcc tcctactatg ccaagttgaa tgatcactta aataacatgg cccactacag 480
gccccccntgc cctgaacctg caggcccayt ggcangggcc tggytcagcc agaagsgcaa 540
wtcaccacct ggagtacagg tgtgcccctc gacctcctgc ggtttgttgg catgragtyt 600
ktagaggtgc caagrgagyt gcagwtgcac agtcamctgy tgragacaca tgttcagtcc 660
agaatggaga agatgatgga cggaatcaag ctagactggg ccaccgcgga actcttgcct 720
tgggttcttt acttgctcaa ggttttaatg ttcgtctaag tggccaagat gttggtcgtg 780
gaactttcag tcagaggcat gcaatggtgg tttgccagga gacggatgac acctacatcc 840
ccctgaacca tatggaccca aatcagaagg ggtttctaga ggtcagcaac agccccctgt 900
cagaagaggc cgtcctggga ttcgaatatg ggatgagcat tgagagccca aagttactgc 960
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caaaaaaggt taagaccctc gtkttctgct ccggcaaaca tttctactcc ctggtgaaca 1440
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ccccttcccg ttggattctt tacagcaaga gatgagcarr tacaaacatg ttaaagatca 1560
tatttggagt caggaggaac ctcagaacat gggtccgtgg tcgtttgttt ctccaaggtt 1620
tgaaaagcag ctggcctgca agctccgtct ggtggccggc cccctttgcc agtacccgct 1680
gtaggaattg gcacagttca cttgcaccag catgaagata tcctcgccaa gaccttcgyt 1740
tgatgatgat tttgaaggaa catatttcnt ttaggaatgg cattaggccc t 1791

<210> 308
<211> 723
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (705)
<223> n equals a,t,g, or c

<400> 308
gggcaagacc tcatgcctaa aaaataaaga gaaagcagag taaaactgga ctctgagata 60
ygactaaagt tctgtgtgat acgtgtgcct tatttagctc aagacattcc tggagcacct 120
ataaaaactg acttgtaatc caggctatgt ctctttttag cttcgtaatc tttggcaagg 180
ccattggatt cttcagctgt acaattagga gactcgatca ggtgattgcc tttctcagct 240
gtcagttctc taatttcagg cttggtagct tgtaggaact gaaattgcaa ttaaaacctt 300
tataaactca aactaaatca tgaattacag aaaaagtcca ttcttccaaa acttgatgtt 360
accacactta caagtttaaa atatgaagtc gactgtttaa aggattctgc atatattcta 420
gtgtgcacat tcagaaacat ttttcttgga aaaagtaccc aacatttttt ataactgcac 480
atattaattt attgccagaa taaattgcat tgcatgctaa ataaagtcag ataattcaaa 540
tccatttgct tttatgtagt ttttcttcta aatgtcaaca ttttggaatt aaaatgttta 600
tggttttata tgagggtagg aaatcttaac tgctttgggg ggtattgttt ataggctttt 660
tgttatgggg ccggtagttt tttaataggg ggattgccca tttcnaccgt ttgggggccc 720
ggg 723

<210> 309
<211> 533
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (393)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (396)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (463)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (527)
<223> n equals a,t,g, or c

<400> 309
aattcggcac gagcgacgtg gtgctgggcg ttgggaccct actttatcta gttcgggaag 60
ttgggttgtg gggtcatacc tgtctgtctg ctcccagctt tcttgggttt cttccgacgg 120
cgtggggcct cgctaaggaa ttcccggccc ctcagggcca cggctttagc ggtgtctttt 180
gcgagttctt cgtaagtaca tcttaaagct gtcaagatgg ttctagcaga ccttggaaga 240
aaaataacat cagcattacg ctcgttgagc aatgccacca ttatcaatga agaggtatgt 300
aaaatattgt atgraatata tatgattgta ttattgtcac tagcattggg aagatggctt 360
attcataatc cccgtattta tatgtatttt gangtngact taatacttgt gggtaaaagc 420
ccaaaggggt taacagtagg aggggtttat tggggaatta ccnccaactc aaattacttc 480
aaccttcctt aagggatttc ccaaaaaaaa aaaaaaccgg ggggggnccc cga 533

<210> 310
<211> 763
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (317)
<223> n equals a,t,g, or c

<400> 310
gtttggaata aagaaagaaa agtttactat ctgtatgtag agtgatctta atttgtgatc 60
ctatatatga gacagtataa aaatacagat aagttttaga aagactcaaa acaatatgta 120
aatgactgat gtttgcatta ttaaggaaaa cttgggatgt tgggtcaaga ggggaaagtg 180
ttagtcaatc cactttggag caatatcatg aaggtcaatt ataattccat atacctttct 240
ttgatgccac agtcrgagat asaatacart ttgggtggcc atggatgtgc cccaatacag 300
tacacatttt tkggttnaaa tttgttttca gatcatttca tggaatcttt gaagtatctt 360
tgactctaac tttgacttgg tggtggacct tccttggttt ttataacacc taagagatat 420
cctttagaat tacatgtatt ttagcataag gaaattgaaa aagtaaaaca tactggtttt 480
tttcaacaag accatatgta aattaaatag tgaaatgtgt atgagtttca gtagaactgt 540
accatcaaca atgtttccat aaatatgcag agttctttct tttgtattgt tatttacaat 600
attgttaaat tgaatgcatt tgcaatttct aggattctaa agaattgagt acagaaagta 660
gcaattttat tatttgatga taatatgaga attactgtgc caatactgtt ttgataaata 720
aatagatttt taaaaataaa tgtattgtac ttattagtgt agt 763

<210> 311
<211> 3131
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (10)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3128)
<223> n equals a,t,g, or c

<400> 311
gggnncaaan gctggagctc caccgnggtg cgtccgctct agaactagtg gatcccccgg 60
gctgcaggat tcggcacgag gccacttcct ggggccgccg gcggggccgc tggctgcact 120
cagcgccgga gccgggagct agcggccgcc gccatgtccc accagaccgg catccaagca 180
agtgaagatg ttaaagagat ctttgccaga gccagaaatg gaaagtacag acttctgaaa 240
atatctattg aaaatgagca acttgtgatt ggatcatata gtcagccttc agattcctgg 300
gataaggatt atgattcctt tgttttaccc ctgttggagg acaaacaacc atgctatata 360
ttattcaggt tagattctca gaatgcccag ggatatgaat ggatattcat tgcatggtct 420
ccagatcatt ctcatgttcg tcaaaaaatg ttgtatgcag caacaagagc aactctgaag 480
aaggaatttg gaggtggcca cattaaagat gaagtatttg gaacagtaaa ggaagatgta 540
tcattacatg gatataaaaa atacttgctg tcacaatctt cccctgcccc actgactgca 600
gctgaggaag aactacgaca gattaaaatc aatgaggtac agactgacgt gggtgtggac 660
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ttggaaaaat tgaataatag acagctcaac tatgtgcagt tggaaataga tataaaaaat 780
gaaattataa ttttggccaa cacaacaaat acagaactga aagatttgcc aaagaggatt 840
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gaagaagtac atcccaagca gcatgcacac aagcaaagtt ttgcaaaacc aaaaggtcct 1140
gcaggaaaaa gaggaattcg aagactaatt aggggcccag cggaaactga agctactact 1200
gattaaagtc atcacattaa acattgtaat actagttttt taaaagtcca gcttttagta 1260
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ctttaagggt accagatatt ttctatactg caggatttct gatgacattg aaagacttta 1860
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gaaatttaaa ttaatatcat tcaaaaggaa acaaaaaatg ttgagtttta aaaatcagga 1980
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gcaaatactc agatttaaaa ttactttaaa gtcctggtac ttaacaggct aacgtagata 2100
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gcagtatcat acctagatgg tgaataacat attcccagta aatttatata gcagtgaaga 3000
attacatgcc ttctggtgga cattttataa gtgcatttta tatcacaata aaaatttttt 3060
ctctttaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 3120
aaaaaaanaa a 3131

<210> 312
<211> 940
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (135)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (890)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (929)
<223> n equals a,t,g, or c

<400> 312
aagcgtgact ctggagatgg agtccaagtt ggcggcagaa aagaaacaga cggaacaact 60
gtcacttgag ctggaagtag cacgactcca gctacaaggt ctggacttaa gttctcggtc 120
tttgcttggc atcgncacag aagatgctat tcaaggccga aatgagagct gtgacatatc 180
aaaagaacat acttcagaaa ctacagaaag aacaccaaag catgatgttc atcagatttg 240

tgataaagat gctcagcagg acctcaatct agacattgag aaaataactg agactggtgc 300
agtgaaaccc acaggagagt gctctgggga acagtcccca gataccaatt atgagcctcc 360
aggggaagat aaaacccagg gctcttcaga atgcatttct gaattgtcat tttctggtcc 420
taatgctttg gtacctatgg atttcctggg gaatcaggaa aatatccaaa atcttcaact 480
gcgggtaaaa gagacatcaa atgagaattt gagattactt catgtgatag aggaccgtga 540
cagaaaagtt gaaagtttgc taaatgaaat gaaagaatta gactcaaaac tccatttaca 600
ggaggtacaa ctaatgacca aaattgaagc atgcatagaa ttggaaaaaa tagttgggga 660
acttaagaaa gaaaactcag atttaagtga aaaattggaa tatttttctt gtgatcacca 720
ggagttactc cagagagtag aaacttctga aggcctcaat tctgatttag aaatgcatgc 780
agataaatca tcacgtgaag atattgggag ataatgtggc caaggtgaat gacagctggg 840
aaggagagat ttcttgatgt gggaaattga gctgagtagg gtccagatcn ggagaaagct 900
agcctttgag ccttgaagcc ctcttaccng gggaggcttg 940

<210> 313
<211> 850
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (848)
<223> n equals a,t,g, or c

<400> 313
caaagttgat ttttaacgtt tgtaaaggtt tgaatgttta tagaagtgca tcatgaaatt 60
ttgtgtaaat ccagatgaac tgtcattata gtactataaa ttagagatag tccataaagt 120
tgggttgaag gagattgaaa atatttcctt tgattaaaag aaaataatta actaacttgg 180
gcttgcttgt gattgaagag ggagattaga tagtcctctg tccccccraa aaagaaacta 240
gcagagaaag acmtaaaaaa gctctttggt gtctgttcat gtgctgtaca tttttccgt 300
tttaatgtct tgtgtagata attcaaagtt tgaactattt ctttcttgga ataagtaata 360
atttattcaa tatggtgtat ctctgagttc aatttaaaac aatccaactc agtaatattt 420
atttttaaat acaaatccta actaaccaat taattaataa aaaggcaaga cttacttgct 480
gtagtattgg ttctcatctg tagagaactg acattggagc aaattttaag tctccccttt 540
gaaaataagc cttgttaact gagggcgtaa tacatttccc acagatttat ccagaaacat 600
tttattagag atcttatagt agtatctcag ttcctactac agctttctaa aggatgagac 660
ttgcatttaa caaaatgaca tatataatat ttttctatag ttttgcaact gaattaaagg 720
aaggtgatgt attataatgt gtagtgaggt ataaagggct agttcattct ctcccaacaa 780
gaacttagaa taaaataaca cytttttttc atgagactta cctcattttt ggtaggctat 840
ggcagttntg 850

<210> 314
<211> 958
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (930)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (934)
<223> n equals a,t,g, or c

<400> 314
cttgcgtccc cgcgtgtgtg cgcctaatct caggtggtcc acccgagacc ccttgagcac 60
caaccctagt cccccgcgcg gccccttatt cgctccgaca agatgaaaga aacaatcatg 120
aaccaggaaa aactcgccaa actgcaggca caagtgcgca ttggtgggaa aggaactgct 180
cgcagaaaga agaaggtggt tcatagaaca gccacagcag atgacaaaaa acttcagttc 240
tccttaaaga agttaggggt aaacaatatc tctggtattg aagaggtgaa tatgtttaca 300
aaccaaggaa cagtgatcca ctttaacaac cctaaagttc aggcatctct ggcagcgaac 360
actttcacca ttacaggcca tgctgagaca aagcagctga cagaaatgct acccagcatc 420
ttaaaccagc ttggtgcgga tagtctgact agtttaagga gactggccga agctctgccc 480
aaacaatctg tggatggaaa agcaccactt gctactggag aggatgatga tgatgaagtt 540
ccagatcttg tggagaattt tgatgaggct tccaagaatg aggcaaactg aattgagtca 600
acttctgaag ataaaacctg aagaagttac tgggagctgc tattttatat tatgactgct 660
ttttaagaaa tttttgttta tggatctgat aaaatctaga tctctaatat ttttaagccc 720
aagccccttg gacactgcag ctcttttcag tttttgctta tacacaattc attctttgca 780
gctaattaag ccgaagaagc ctgggaatca agtttgaaac aaagattaat aaagttcttt 840
gcctagtaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 900
aaaaaaaaaa aaaaaaaaaa aaaaaaaaan gggnggccgt tttaaaggaa ccaggttt 958

<210> 315
<211> 500
<212> DNA
<213> Homo sapiens

<400> 315
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tgtacattcc acaagcattg ccttcttatt ttacttcttt tagctgttta actttgtaag 120
atgcaaagag gttggatcaa gtttaaatga ctgtgctgcc cctttcacat caaagaacta 180
ctgacaacga aggccgcgcc tgcctttccc atctgtctat ctatctggct ggcagggaag 240
gaaagaactt gcatgttggt gaaggaagaa gtggggtgga agaagtgggg tgggacgaca 300
gtgaaatcta gagtaaaacc aagctggccc aaggtgtcct gcaggctgta atgcagttta 360
atcagagtgc catttttttt tttgttcaaa tgattttaat tattggaatg cacaattttt 420
ttaatatgca aataaaaagt ttaaaaactt aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 480
gcggccgctc gaattaagcc 500

<210> 316
<211> 1228
<212> DNA
<213> Homo sapiens

<400> 316
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caaggaaaga gtactgtgtg ctgagagacc atggcaaaga atcctccaga gaattgtgaa 120
gactgtcaca ttctaaatgc agaagctttt aaatccaaga aaatatgtaa atcacttaag 180
atttgtggac tggtgtttgg tatcctggcc ctaactctaa ttgtcctgtt ttgggggagc 240
aagcacttct ggccggaggt acccaaaaaa gcctatgaca tggagcacac tttctacagc 300
aatggagaga agaagaagat ttacatggaa attgatcctg tgaccagaac tgaaatattc 360
agaagcggaa atggcactga tgaaacattg gaagtgcacg actttaaaaa cggatacact 420

ggcatctact tcgtgggtct tcaaaaatgt tttatcaaaa ctcagattaa agtgattcct 480
gaattttctg aaccagaaga ggaaatagat gagaatgaag aaattaccac aactttcttt 540
gaacagtcag tgatttgggt cccagcagaa aagcctattg aaaaccgaga ttttcttaaa 600
aattccaaaa ttctggagat ttgtgataac gtgaccatgt attggatcaa tcccactcta 660
atatcagttt ctgagttaca agactttgag gaggagggag aagatcttca ctttcctgcc 720
aacgaaaaaa aagggattga acaaaatgaa cagtgggtgg tccctcaagt gaaagtagag 780
aagacccgtc acgccagaca agcaagtgag gaagaacttc caataaatga ctatactgaa 840
aatggaatag aatttgatcc catgctggat gagagaggtt attgttgtat ttactgccgt 900
cgaggcaacc gctattgccg ccgcgtctgt gaacctttac taggctacta cccatatcca 960
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gcccgcatgc tggggagggt ctaataggag gtttgagctc aaatgcttaa actgctggca 1080
acatataata aatgcatgct attcaatgaa tttctgccta tgaggcatct ggcccctggt 1140
agccagctct ccagaattac ttgtaggtaa ttcctctctt catgttctaa taaacttcta 1200
cattatcacc aaaaaaaaaa aaaaaaaa 1228

<210> 317
<211> 1731
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1661)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1726)
<223> n equals a,t,g, or c

<400> 317
gcaatctttt tctctcctgg ttaaatgggg ctgttgatca ttttctctac gtaagggaat 60
ttattgatta agtttaatta atttgatata gactgtcatg tagtgatgta gtgctatact 120
gtagtcggaa gtttttctta aaagcaaaga gcaaaaatgc aaagttttat ttgtaaaagc 180
tgaggaccct tggggatgga ttaggtttgc cgatgatcct aaaagtaagc aaactgtatg 240
acaagactac tattgcaaat gaaggatatt tatagctaaa ctgcgcacac aaaagaagtt 300
ttatattgtg agttatagtt ggttcagaaa acagtttgta ctctccctgg cccaggaagg 360
cacacagaca aaaatgtcgg ccacttttac tcaaatacag cccaagcaca gacagtcagg 420
ttcgtgatca tcaccaacat ctgataaaat ctcattgaag gcaatgccat cacagctttg 480
ctcaattact acgaggaaga gacaacaagc atctttcgtg ttgtctcgtc tgattggagg 540
ctgaatagta gatggaatgg ggggacagtg tgcctggtgt gaggaagacg taagatcccc 600
matttggaaa gcatgccccc ctccctttta gtagaagccc atggttgccc tttgccaaac 660
tggggaggag gcaatgagcc ttggtggaag gaacctctct gtkgatattt aaagaagtga 720
gggctgtggg tattcattgt tagaaatgcc aatttcactt tgaaaccata gtccaagtct 780
ctaggttggt agaagggaaa ggaaggaagt ggtcccagtg attctagatc tggttgggaa 840
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tttgcatttt ccatagagac agaaaacttt gcaagtcaat cactgttgtt cccatggtac 1140
tgtaagaaaa aaaaaaagga aaaagaaaaa aaaaaagaaa accagccaat cattgcgtgt 1200

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acagagctaa aaattgtaat taatagagcc tgttgggaaa aaaaagaaaa caactgttgc 1260
cttttttct tgtataaaag agaatttatg acaaaattta gctgtgagga atgtgatacg 1320
tgtttatatt tctgaatatg gracaaattg attcatgggg atatatttta atgtaaacta 1380
aatcaggtat gtaaagttgt tttaaaatgg grgactatat aagtaattct ctaaagcttt 1440
agttggtttg aatatcatca tttcctccat ggtgagcctg cttgtgratt attaagcact 1500
tgtttgcatt ctctgttctt cactcattta tttcttgcag tgtgctatgg acttaatgct 1560
ctttctgtat tgatgaaaag cagtatgtgg gccaatcttt ttataaaaca ctatgcatat 1620
ataaatatta cattgttcat agctttattt gacttatggg nttatacata acattagaat 1680
gagtaagctg tagttgtgtg gacattttat aaaaacaaag gtcccnttcc c          1731
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<210> 318
<211> 1208
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (29)
<223> n equals a,t,g, or c

<400> 318

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cgggtcgacc cacgcgtccg gaaagatcnt ctttaggaat aatagatgat ggtaagttcc 60
actttggtta ttggaaggca agtcattatt actggtatta gttaaaacac atatcaaatg 120
cttgctcttc atcatatata tagttatgca tacatacaca cacacacata cagtatattc 180
tttcctcaaa agggttaaga tgtctaaaat agggacctag aagcttaaca ctatttaagt 240
aaatacagta gaagctcaca aatagatttc tttgcacaat gattttttgc aaaattttac 300
agtaataata atcccaaggc aaatctctcc tgaactgctt tccattccat aatttgtagt 360
ataattcttg gattccactg ttttctttgg ggaatggaag ttctgaatta aaagcccact 420
gtggagatgc tgtggttcat ggaatctctt ccagtgtaat tcagaatcat tggcctagaa 480
agtctctgat atttggaggg gaacaaaaat cactcacaag caatccatga tctatacaca 540
taagcataat ttcctttagt tctagttagt catcagagaa cagtcatgta tgcaagtttt 600
gtgactgaga aatttctgtg cttccaatcc acaatgagat gcatgatttt gttttcatcc 660
catttccccc aagcccctgt aaatcaggga aaatgcgcaa ctgatcgcct aggagagggc 720
ctcgtagtgg cacagctgga gatagtttca aagtctaaac caccagccca tcctgaggaa 780
agcctcctat ggaatgtaaa gtgcaatcat ttcttcagat ataagacttt ccccaacaat 840
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acagtgccca tgaatgggac acctgtaatg taacccacac agcggtttgc agagaatgtt 1020
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gggaagttgg agcaagaggg gcatactatt gggctgggag gatttgacag catttcccca 1140
gttgcccttt aagttcttct atttcaaacg ttaattttgc ttctctttct aaaaaaaaaa 1200
aaaaaaaa                                                          1208
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<210> 319
<211> 756
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (30)

<223> n equals a,t,g, or c

<400> 319
ccccagtctt accactctag catgcttgtn ataataaaca tggtgagtga ctttttttcta 60
aagatccccc ctctctcaga ggtcatgtcc tttcgtaacc agcccttgct cttgaacccc 120
cakgcagttt ggtggttatg ccaaggaagc agactacgta gcacaagcca cccgtctgcg 180
tgctgccctg gagggcacag ccacctaccg gggggacatc tacttctgca cgggttatga 240
ccctcccatg aagccctacg gacggcgcaa tgagatctgg ctgttgaaga catgagtgac 300
ccactgaacc aagaacttac tggaagtgtg cctctgtgtc tccttcctcg ggggtaagga 360
ggggacagtg cttcccaagt tccagctgca agtccaactt aaccaacttt ccttcaaagt 420
cagttactgc caattttctg aaaaaagcat gttccatata ctaagtctct tttctcacgg 480
taggaaataa tacagccaag atatgcagca tccttctcat tgatgtagaa aattctgcga 540
tagaccagaa aaatcctggc agcttttctc caggcatctg ggtcactaaa aactgatttt 600
ctaaaattat tggatttgta ttttgttatt aagggggaaa atgtgatttg tgcctgatct 660
ttcatctgtg attcttataa gagctttgtc ttcagaaaaa ctaaaaataa aaggcattga 720
cttaaacagc tgaramaaaa aaaaaaaaaa aaaaaa 756

<210> 320
<211> 1209
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1203)
<223> n equals a,t,g, or c

<400> 320
cttcgccgtc atccgcttcg aaagcatcat ccacgagttc gacccgtggt ttaactatag 60
atcaacacat catcttgcat ctcatgggtt ctatgaattt ttaaattggt ttgatgaaag 120
agcatggtat ccactaggaa gaatagtagg tggtactgtt tacccagggt tgatgataac 180
cgctggcctt attcattgga ttttaaatac attgaacata actgttcaca taagagacgt 240
atgtgtgttc cttgcaccaa cttttagcgg ccttacatct atatctactt tcctgcttac 300
aagagaactt tggaaccaag gagcaggact tttagctgct tgttttattg ctattgtacc 360
aggctacata tctcggtcag tagctggatc ctttgataat gaaggcattg ctatttttgc 420
acttcagttc acatactatt tatgggtaaa atctgtaaaa actgggtcag ttttttggac 480
aatgtgctgc tgcttatcct atttctatat ggtctctgct tggggtggtt atgtatttat 540
catcaatctt attccactgc atgtatttgt gttgttactg atgcagagat acagcaaaag 600
agtctacata gcatatagca ctttctacat tgtgggttta atattatcaa tgcagatacc 660
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attgctgcaa gcttatgctt tcttgcagta tctgagagac cgattaacaa aacaagagtt 780
ccagaccctt ttcttttttgg gtgtatcact agctgcaggt gctgtgttcc ttagtgtcat 840
ctatttgact tatacaggtt acattgcacc atggagtggc aggttttatt cattgtggga 900
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actactttga tatggaatag ttatttttct ttttgagatt atttacttta aatttttgtt 1140
tttctatgtt tgactctata tattcaagat aaattttctc ctttattttg cataggtgct 1200
tanccaaga 1209

<210> 321

<211> 668
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (653)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (654)
<223> n equals a,t,g, or c

<400> 321
aaagcagatg ccatctatga tatgattggt ttcccagact ttatcctgga gcccaaagag 60
ctggatgatg tttatgacgg gtacgtaaat ttctgaagrt tctttcttcc aaaacatgtt 120
gaatttgtac aacttctctg ccaaggttat ggctgaccag ctccgcaagc ctcccagccg 180
agaccagtgg agcatgaccc cccagacagt gaatgcctac taccttccaa ctaagaatga 240
gatcgtcttc cccgctggca tcctgcaggc cccccttctat gcccgcaacc accccaaggc 300
cctgaacttc ggtggcatcg gtgtggtcat gggccatgag ttgacgsatg cctttgatga 360
ccaagggcgc gagtatgaca aagaagggaa cctgcggccc tggtggcaga atgagtccct 420
ggcagccttc cggaaccaca cggcctgcat ggaggaacag tacaatcaat accaggtcaa 480
tggggagagg ctcaacggcc gccagacgct gggggagaac attgctgaca acgggggct 540
gaagctgcct acaatgctta caaagcatgg ctgagaaagc atggggagga gcagcaaytg 600
cagccgtggg gsttamcaac caccastytt cttcgtggga tttgccccag gtnntggtgc 660
tcggtccg 668

<210> 322
<211> 809
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (372)
<223> n equals a,t,g, or c

<400> 322
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cccaagttgt agttcttgtt atgagtctta caaccctatg gactttggac aaattacttc 360
tctgcgtctg tntcctcatc tgtaaaatga aaataatttc tgtttcatac aggtatagtc 420
taaataggga taattacacc tacttcaaag ttgtaaaata cacaattaca actagatagg 480
aggtataagt tctagtgttc tgtagcactg taggatgact atagttaaca atattgtata 540
gtttcaaata gctagaagaa ggatattgca tgttcccaaa acaaagacat aagtttttga 600
gatgatagat atgctaatta ccctaatcac tatatgttat atgtattgca acatcactat 660
gtacccccat aaatatgtac agttattgtg tattaaaatt tttttaaact aaaattataa 720

gacattaaaa aaaggtatca catgtaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 780
aaaaaaaaaa aaaaaaaaac tcgagggggg 809

<210> 323
<211> 1442
<212> DNA
<213> Homo sapiens

<400> 323
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caggcgcaat gtggtggctg cttctctggg gagtcctcca ggcttgccca acccggggct 180
ccgtcctctt ggcccaagag ctaccccagc agctgacatc ccccgggtac ccagagccgt 240
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cacatattgg ttgttaaaaa tatgtcatca tgtatttgtt gagtgcctgc tctatcaggt 720
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aa 1442

<210> 324
<211> 2701
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2699)
<223> n equals a,t,g, or c

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aggcctccca cagaaggtgg cagaaagact tgatgaaata tttcagacag gattggtagc 240
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tctgtctgta ctacagcagt tcaaggaaag tgacttatca catgttcaga acaaaagtgc 360
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a 2701

<210> 325
<211> 1070
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<400> 325
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agttggcctt cgaggcacca tcataggaat aaaaggagct aatagagaag ccgatgtact 180
atttgaagta ttatttgatk wagaatttcc tggagggtta acaataagat gctcacctgg 240
tagaggttat cgactgccaa caagtgcctt ggtgaacctt tctcatggga gtcgctctga 300
aactggaaat cagaagttga cagccatcgt aaaaccacaa ccagctgtac atcaacatag 360
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ttttgttcct actcaagtac ctactaaaga tgatgatgaa ttctgcaaca tttggcagtc 480
cttacaggga tctggaaaga tgcaatactt cgagccaact atacaagaga agggtgcagt 540
tctacctcaa gaaataagcc aagtaaatca acatcataaa tctggcttta atgacaacag 600
tgttaaatat cagcaaagaa aacatgaccc tcacagaaaa tttaaagaag agtgtaagag 660
tcctaaagct gagtgttggt cccaaaaaat gtccaataag cagcctaact ctggaattga 720
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gcttaaagaa attctaaaaa ttgatggctc taacactgtg gaccataaga atgaaatcaa 900
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<210> 326
<211> 1729
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (125)
<223> n equals a,t,g, or c

<400> 326
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ggcancgtgc gacaggattt ggcccagctc atgaattcga gcggctctca taaagatctg 180
gctggcaagt atcgtcagat cctggaaaaa gccattcagt tatctggagc agaacaacta 240

gaagctttga aagcttttgt ggaagcaatg gtaaatgaga atgtcagtct cgtgatctcg 300
cggcagttgc tgactgattt ttgcacacat cttcctaact tgcctgatag cacagccaaa 360
gaaatctatc acttcacctt ggaaaagatc cagcctagag tcatttcatt tgaggagcag 420
gttgcttcca taagacagca tcttgcatct atatatgaga aagaagaaga ttggagaaat 480
gcagcccaag tgttggtggg aattcctttg gaaacaggac aaaaacagta caatgtagat 540
tataaactgg agacttactt gaagattgct aggctatatc tggaggatga tgatccagtc 600
caggcagagg cttacataaa tcgagcatcg ttgcttcaga atgaatcaac caatgaacaa 660
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ttgtagtcat gtaaaactta agtgcttcat gcctctccaa atgtggttat tctaataaat 1680
ggagaaatga gccaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaa 1729

<210> 327
<211> 686
<212> DNA
<213> Homo sapiens

<400> 327
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ggcaggattt gaacctagaa cctctggctc cacacactag taatctaaac cactctccct 180
acaatacaac atacgtggta aagatgtgtg gtgggcacgc aatcaacgta ggtcccttca 240
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ctgtcctggg tcattcctgc agcctgccct gccctgcctg gtctcaccct ccctctgcca 360
acagaagtct gggcagggtt ttatgggctc tgataaggcc ctggcagggc cgaagttcat 420
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ctcacaggac cagccactag cgcagc 686

<210> 328
<211> 1241
<212> DNA
<213> Homo sapiens

<400> 328

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atttttatgc agctcatcct tctgctgatg ctgccaatgg ctctaatgaa gatagaggag 540
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aaaaaaaaaa accccggccg ctcccacttc agattggtaa c 1241

<210> 329
<211> 1652
<212> DNA
<213> Homo sapiens

<400> 329
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aatgaatcca gctactacat taccaggtct gatgccttta ccagcaggac tgcccaacct 180
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cagcgagaag cctgtttctg cggctgtgga tgccaatgct tctgagtcac cttaactttg 600
aaccattctt tggaattggc gtggtatatt taaccacggg agcgtgtctg gaaacgcaaa 660
ctatcattaa tttcatacta gtttgtaccg tatctgtagg catcctgtaa ataattccaa 720
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 1652

<210> 330
<211> 1916
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1895)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1902)
<223> n equals a,t,g, or c

<400> 330
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gccttcatct tcttgagtac ccaaaccagg cttcaggtgt cctttgagga tagccaggtt 240
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tttttttgta attatatgaa gaaagtccag ttctcataaa tattgatcac ttaaaaaact 1620
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attttacttt aaaatgagaa tctggtgtta ctgtatttta tcgttttcaa taaaacttct 1860
taagtgtttt ggaaaaaaaa aaaaaaaaaa aattnctgcg gnccgcaagg gaattc 1916

<210> 331
<211> 1658
<212> DNA
<213> Homo sapiens

<400> 331
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ccccgcggcg cggccgcagg gccatgctag ccttgcgcgt ggcgcgcggc tcgtgggggg 180
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cctgctgccg cccgtgccct gctgcttggg ctgcctggcc gaacgctgga ggctgcgtcc 300
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gaaggcggct cccaggccag cggyaykgcg ggcgccgctg ccgaagcccc gggcgkccag 420
tggggcccgg cgagcacccc cagcctgtat gaaaacccat ggacaatccc gaatatgttg 480
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aatattgcac taggagtttt tgctttagct ggactaacag atttgttgga tggatttatt 600
gctcgaaact gggccaatca aagatcagct ttgggaagtg ctcttgatcc acttgctgat 660
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aatgaatcca ggttccaata tcaacaaaca ttgctatg 1658

<210> 332
<211> 1102
<212> DNA
<213> Homo sapiens

<400> 332
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tatataatgt ggatgctggg cacagagctg tcatctttga ccgattccgt ggagtgcagg 240
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atgtcaacat cacactgcgc atcctcttcc ggcctgtcgc cagccagctt cctcgcatct 420
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ccaggcaggt gagcgacgac cttacagagc gagccgccac ctttgggctc atcctggatg 600
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<210> 333
<211> 4201
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (4077)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4161)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4186)
<223> n equals a,t,g, or c

<400> 333
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gctccccata ctagtcgccg atatttggag ttcttacaac atggcagaca ttgacaacaa 180
agaacagtct gaacttgatc aagatttgga tgatgttgaa gaagtagaag aagaggaaac 240
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ccagcctatg agttttgtct tagaatttca ctttgaaccc aatgaatatt ttacaaatga 840
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taatattcaa atatttgaat gctttggttt cagggattgg tttaaaattg gagtccnttt 4080
tttatggggt tagtcttaca aaaatttaag cctttatatt tttgacttta aatcaaaacc 4140
aaatgttatt ttaaatgtac nggaatwgga ttgggtaggt gcmggnagga rtgtwaggtt 4200
c 4201

<210> 334
<211> 1239
<212> DNA
<213> Homo sapiens

<400> 334
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ggcgtgcaaa aactaacatt gaaattttga aacagcagca gagtgagtgg attttatttt 180
tcgttattgt tggtggttta aaaaattccc cccatgtaat tattgtgaac accttgcttt 240
gtggtcactg taacatttgg ggggtgggac agggaggaaa agtaacaata gtccacatgt 300
ccctggcatc tgttcagagc agtgtgcaga atgtaatgct cttttgtaag aaacgtttta 360
tgatttttaa aataaattta gtgaacctat ttttggtggt catttttttt ttaagacagt 420
cattttaaaa tggtggctga atttcccaac ccaccccccaa actaaacact aagtttaatt 480
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gcaaacttag ttctggtgat ttcttgatgg tttggaagtc tattgctggg aagaaattcc 600
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gataatttct cacctataga cttaaactgt caatttgctc tagtgtctta ttagttaaac 900
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taaaattcac ttccaaataa ataaaacacc catgatgcta gatttgatgt gtgcccratt 1140
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tagtaatctt atgtaaaaaa aaaaaaaaaa aactcgaga 1239

<210> 335
<211> 1249
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (36)
<223> n equals a,t,g, or c

<400> 335
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caaaattgtt aagaaatgtt agtggtgggt ctgatctgac tgcagccatc ggtaaataaa 120
agtttttgat cctgttgaac ccgcctgaga cggtgctgtg aggggaaagc cttccgcacc 180
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tgagtattta tctttttatt ttttattttt ttttttgaaa gaatgtcttg gaatgcgcaa 360
gtctcccttt agagccgtct tttgcaggga gcgggaagtg acaagagctc agatctccct 420

cccgatctcc ctccccacct ccgaagtctc ctccgtggac cacaggtgga tctttgtgcg 480
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ttaaaattgt atcaactaga aataaaattg catgagtatt ttaaaaaaa 1249

<210> 336
<211> 722
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (690)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (703)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (718)
<223> n equals a,t,g, or c

<400> 336
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gtcagtcgac ataagccctg tggatatggc cttatgtaca ctgtaatgca gacaggtgct 120
tttcatcatt catgtaacat tctcacacag ttgaggrtat tcatctcctc accaattcca 180
gattgtraat gtacywtctt aaacaactct tgaggtcacc aaacagtagt tatttgactg 240
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tcagagtggt cacgttgggc agrtgggcac aggtgctggt gatgcccctc ckgggcaaaa 660
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ac 722

<210> 337

<211> 2210
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (40)
<223> n equals a,t,g, or c

<400> 337
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ggactgagat cccagaacca tgaacctggc catcagcatc gctctcctgc taacagtctt 180
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<210> 338
<211> 741
<212> DNA

<213> Homo sapiens

<220>
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<222> (581)
<223> n equals a,t,g, or c

<220>
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<222> (656)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (711)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (719)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (720)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (737)
<223> n equals a,t,g, or c

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<212> DNA
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<221> misc feature
<222> (556)
<223> n equals a,t,g, or c

<220>
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<222> (559)
<223> n equals a,t,g, or c

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<212> DNA
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<223> n equals a,t,g, or c

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<210> 345
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<212> DNA
<213> Homo sapiens

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<211> 884
<212> DNA
<213> Homo sapiens

<400> 346
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<210> 347
<211> 391
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (381)
<223> n equals a,t,g, or c

<400> 347

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<211> 2540
<212> DNA
<213> Homo sapiens

<400> 348
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<210> 349
<211> 1926
<212> DNA
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<221> misc feature
<222> (281)
<223> n equals a,t,g, or c

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<222> (302)
<223> n equals a,t,g, or c

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<221> misc feature
<222> (326)
<223> n equals a,t,g, or c

<220>
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<222> (1879)
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<220>
<221> misc feature
<222> (1885)
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<220>
<221> misc feature
<222> (1891)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1892)
<223> n equals a,t,g, or c

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aaaaaaaaaa aaaggggcng gccgnttcta nnaggatcca agctttacgt accccgttgc 1920
aatgcc 1926

<210> 350
<211> 1233
<212> DNA
<213> Homo sapiens

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<221> misc feature
<222> (1222)
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aaccagtgaa accaaacatg acacctctct gaaacctatt agtgtctcct acaacccagc 240

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<210> 351
<211> 2510
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2503)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2509)
<223> n equals a,t,g, or c

<400> 351
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<212> DNA
<213> Homo sapiens

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agatgtatca attagcatat agaaaaatat tactttaaga tgacttgttt cctttgaaaa 1560
tacctgtgta ctgagggtta tgatttgtgt caaaaattga cataagtgct tttacaagca 1620
ccaaagttga atgaattttc aacaaaatgt aattaaagtc tatgttttca gttatgactc 1680
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aaaaagagaa acccgtggca ctatgtaaat aaagtaagca tactttgttg ttagtaaata 1860
gatgaggcat gcctgggaaa tgctcccttg gcataaatag caatcaatta taattagtaa 1920
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ccatatttta aggagaaaga actctattgg tgtcgtctga gcagccattt aaaaattgga 2100
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agaga 2765

<210> 353
<211> 1755
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (134)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (140)
<223> n equals a,t,g, or c

<400> 353
ggcttccggt cccctgagac tggggcctcg ctcgctcccg acccggttgc aagtgttgcg 60

gtgggagaaa gtcgcgtccg catcggaggg gaagcgccgt catgcctaag tattatgagg 120
acaagccgca ggcngcgcgn tgcgcgggcc tgaaggagga cctgggcgcg tgtctgctgc 180
agtcggactg tgtggtccag gaaggaaaat cacctcggca gtgtttgaag gaaggatact 240
gcaactcttt gaagtacgca ttttttgagt gtaaaagatc agtgttggat aacagggcaa 300
gattcagagg aagaaaagga tattgatgca ttatgttgaa gccaacatgg aaaacaacaa 360
atattttccc tggtcattaa cacaaagaag ccaaaacagg aaacatactt tttactacat 420
ctgtttggtt ggaccagatt tcccctccgt ggaacactga agaaagtgga tgagttgttt 480
tcgaatatgt ataaagtaaa tgattctctt gatccaagtt atttttagaa gaaaaaccta 540
attgaacagg tatgggttgg gagcataata aatgtgtttt gagaattgtt ctaaagcaca 600
gaaaatggaa agactgttat ttgcaaactt gactcttcaa ttgrattacc caattagtac 660
aggccactga tttgactgac acagtcgata acatgcagcc tatccagaag gtgtctgttg 720
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tcagaatcac atggatgagt agtgggctga atcccaaaag gaaaggggtt tagagcaagt 1260
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gttctactaa aaagtgagaa ttccacagca atatgggtca ttgttgcaga atatcacaaa 1560
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cataccgtaa aattc 1755

<210> 354
<211> 1959
<212> DNA
<213> Homo sapiens

<400> 354
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gctggaaata tttctttcaa ttccatctct tagttttcca taggaacatc aagaaatcat 180
gaacaacttt ggtaatgaag agtttgactg ccacttcctc gatgaaggtt ttactgccaa 240
ggacattctg gaccagaaaa ttaatgaagt ttcttcttct gatgataagg atgccttcta 300
tgtggcagac ctgggagaca ttctaaagaa acatctgagg tggttaaaag ctctccctcg 360
tgtcaccccc ttttatgcag tcaaatgtaa tgatagcaaa gccatcgtga agacccttgc 420
tgctaccggg acaggatttg actgtgctag caagactgaa atacagttgg tgcagagtct 480
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agttgccaga gcacatccca aagcaaagtt ggttttgcgg attgccactg atgattccaa 660
agcagtctgt cgtctcagtg tgaaattcgg tgccacgctc agaaccagca ggctcctttt 720
ggaacgggcg aaagagctaa atatcgatgt tgttggtgtc agcttccatg taggaagcgg 780
ctgtaccgat cctgagacct tcgtgcaggc aatctctgat gcccgctgtg tttttgacat 840
gggggctgag gttggtttca gcatgtatct gcttgatatt ggcggtggct ttcctggatc 900

tgaggatgtg aaacttaaat ttgaagagat caccggcgta atcaacccag cgttggacaa 960
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ccctcagctg ctgaacaagc atttgtagct tgtacaatgg cagaatgggc caaaagctta 1860
gtgttgtgac ctgtttttaa aataaagtat cttgaaataa ttaaaaaaaa aaaaaggggg 1920
gccgccctag gggttcccaa gtttacgtac gctgcatgg 1959

<210> 355
<211> 1067
<212> DNA
<213> Homo sapiens

<400> 355
aattcggcac gaggtcactg ctggctgagg ctgcgctcag gcccgtggat ctcatcgaag 60
atggcggcgc gatctgtgtc gggcattacc agaagagtct tcatgtggac agtctcaggg 120
acaccatgta gagaattttg gtctcgattc agaaaagaga aagagccagt ggttgttgag 180
acagtagaag agaaaaagga acctatccta gtgtgtccac ctttacgaag ccgagcatac 240
acaccacctg aagatctcca gagtcgtttg gaatcttacg ttaaagaagt tttggttca 300
tctcttccta gtaattggca agacatctcc ctggaagata gtcgtctaaa gttcaatctt 360
ctggctcatt tagctgatga cttgggtcat gtagtcccta actccagact ccaccagatg 420
tgcagggtta gagatgttct tgatttctat aatgtcccta ttcaagatag atctaaattt 480
gatgaactca gtgccagtaa tctgcccccc aatttgaaaa tcacttggag ttactaagca 540
attcggaaga gaaacacatt gaaatcactg tctttccctg agcaaggggg ctgctcatta 600
gatcttttga tactttacca tgtgaaatac taccagaact gttctctaaa cccacttttt 660
ctgtagagga atgtatcatc tttttttttc tcatattaca aatggacaaa taacggactt 720
tctattttca tatttgctga aaccattttt taaatgaaat taggtcatta tttatgaaaa 780
gttttgagag ggcactgtca acttgggttt aagacaggag gacattgcaa gttcacacct 840
ttcataagca taaagtagtt gcaagaaagt attttcatcc tgttaggatt catatctaag 900
atagagttat gcattgcaca tacacaaata aacttttatt agatagatac ctataaaaga 960
aacataaaag tatgttgtgt attactgaca gttctagatt aatttctttt agaattaaag 1020
tagatttgtt aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaa 1067

<210> 356
<211> 1023
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (996)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (998)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1003)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1016)
<223> n equals a,t,g, or c

<400> 356
cctagtgcgt agcgcccggc tcctgcaggc gctcggcctc cgctcattcc tgaccccgca 60
gtgggcgcga tggcggaggc tgtactgagg gtcgcccggc ggcagctgag ccagcgcggc 120
gggtctggag ccccccatcct cctgcggcag atgttcgagc ctgtgagctg caccttcacg 180
tacctgctgg gtgacagaga gtcccgggag gccgttctga tcgacccagt cctggaaaca 240
gcgcctcggg atgcccagct gatcaaggag ctggggctgc ggctgctcta tgctgtgaat 300
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tgccagtctg tcatctcccg ccttagtggg gcccaggctg acttacacat tgaggatgga 420
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gtccatgaaa agatcttcac acttccagga gactgtctga tctaccctgc tcacgattac 660
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ggg 1023

<210> 357
<211> 1953
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (45)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (47)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1686)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1821)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1920)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1927)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1935)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1948)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1951)
<223> n equals a,t,g, or c

<400> 357
gtcacgagcg aggggggtgcg tgtgaggtca tcgcgcgggc gggcntncgg ggtctggcgg 60
tttgaacgag acgaagacgg aaccggagcc ggttgcgggc agtggacgcg gttctgccga 120
gagccgaaga tggcagtgaa cgtatactca acgtcagtga ccagtgataa cctaagtcga 180
catgacatgc tggcctggat caatgagtct ctgcagttga atctgacaaa gatcgaacag 240
ttgtgctcag gggctgcgta ttgtcagttt atggacatgc tgttccctgg ctccattgcc 300
ttgaagaaag tgaaattcca agctaagcta gaacacgagt acatccagaa cttcaaaata 360
ctacaagcag gttttaagag aatgggtgtt gacaaaataa ttcctgtgga caaattagta 420
aaaggaaagt ttcaggacaa ttttgaattc gttcagtggt tcaagaagtt tttcgatgca 480
aactatgatg gaaaagacta tgaccctgtg gctgccagac aaggtcaaga aactgcagtg 540
gctccttccc ttgttgctcc agctctgaat aaaccgaaga aacctctcac ttctagcagt 600
gcagctcccc agaggcccat ctcaacacag agaaccgctg cggctcctaa ggctggccct 660
ggtgtggtgc gaaagaaccc tggtgtgggc aacggagacg acgaggcagc tgagttgatg 720
cagcaggtca acgtattgaa acttactgtt gaagacttgg agaaagagag ggatttctac 780

ttcggaaagc tacggaacat tgaattgatt tgccaggaga acgaggggga aaacgaccct 840
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gttatncccg aaatttctat gtattatatt ttttggggaa gtgaggtgtg cccagttttt 1740
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ccactggggg actcctcttt tggcctcctt ggaagtttgc tgcttaaaag ttggaaagtn 1920
ccaccangcc aggtngattc catgcctngc naa 1953

<210> 358
<211> 2026
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (701)
<223> n equals a,t,g, or c

<400> 358
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cataagggcg gcgagatcag cctcctgtct catctggaag accaccactc tggggtctca 180
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gactggagaa gttaggcctc agacatccca agccttctcc tttcattgga aacttgacat 360
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aattttggaa aaatgtcact gaagtgattg aaagagtgcc tggcatgcaa ggataagagg 1920
ttctttacat aacatttcct aaatgcttaa taaacgtttg ttgcacttgg ttttgacatt 1980
gccaaaaaaa aaaataagaa gaaaatgaaa aaagttttgc gtcgac 2026

<210> 359
<211> 1799
<212> DNA
<213> Homo sapiens

<400> 359
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cgcggggcag ctgcggagca tgtcgacccc ggcccggagg aggctcatgc gggatttcaa 180
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gacaactggt ctgttaatct tttcatcat tgttgtgtat aatttacctc tcattagaaa 660
ggctaacaaa ttttaagtgc cacaggtttt aaggattctg cagaaaaaaa agaaaaaagt 720
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gtttattctg ggaaatgttt taatgccagg gcctgctgag ttgcttcttc ttgtggagat 1620
ttttttttta atctcctgag ttgtataaaa gttgtactgc atcttagttt actggataaa 1680
tttaaaacac agtattgtag aaagctaata caaaactatc ctatgccttc aaatagtata 1740

gaaaatggaa aatatacaag taaattctgt tgaaccaaaa aaaaaaaaaa aaaaaaaaa 1799

<210> 360
<211> 510
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (417)
<223> n equals a,t,g, or c

<400> 360
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gaagcataat tyatttttgt atctgtggta acaaaacatt aaccaaaaga ttttctgtcc 120
cagaagcctc cccgaccccc caagctattt gctcacatta acaaattaaa gtgcctgaag 180
cataattcat tctttacctg tatactaaaa accctgttgt attgattttt ttataataag 240
ccttttttacc tctgtgtaaa aaatatatat acaagtgtat gatgtacatt ttagttctta 300
actttttttt atggtttcta atatgtatga ccaatgtagc cattgcttta aaatgtaccg 360
tgtaaatata aacacatcct atgcaraaaa aaaaaaaaaa aagggcggcc gctctanagg 420
atccaagctt acgtacgcgt gcatgcgacg tcatagctct tctatagtgt cacctaaatt 480
caattcactg gccgtcgttt tacaacgtcg 510

<210> 361
<211> 1087
<212> DNA
<213> Homo sapiens

<400> 361
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ctctcactcc tgaattcagt tgctttgccc aagataggag ttctctgatg cagaaattat 120
tgggctcttt tagggtaaga agtttgtgtc tttgtctggc cacatcttga ctaggtattg 180
tctactctga agacctttaa tggcttccct ctttcatctc ctgagtatgt aacttgcaat 240
gggcagctat ccagtgactt gttctgagta agtgtgttca ttaatgttta tttagctctg 300
aagcaagagt gatatactcc aggacttaga atagtgccta aagtgctgca gccaaagaca 360
gagcggaact atgaaaagtg ggcttggaga tggcaggaga gcttgtcatt gagcctggca 420
atttagcaaa ctgatgctga ggatgattga ggtgggtcta cctcatctct gaaaattctg 480
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aaagaaaaga cttttgttga aatagcttta ctgtttctca agtgttttgg agaaaaaaat 840
caaccctgca atcacttttt ggaattgtct tgatttttcg gcagttcaag ctatatcgaa 900
tatagttctg tgtagagaat gtcactgtag ttttgagtgt atacatgtgt gggtgctgat 960
aattgtgtat tttctttggg ggtggaaaag gaaaacaatt caagctgaga aaagtattct 1020
caaagatgca tttttataaa ttttattaaa caattttgtt aaaccaaaaa aaaaaaaaaa 1080
aaaaaaa 1087

<210> 362
<211> 2273

<212> DNA
<213> Homo sapiens

<400> 362
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agcgagagca gggtgcccat cagctgcccc gagtgcagcg agcgactcaa cccgcacgac 180
atccgcttgc tgctcgccga cccgccgctt atgcacaagt acgaggagtt catgctgcgc 240
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cgtcaacaga gggcccagac tttacgagtt cggaccaaac acacttcagg tctcagttat 480
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<210> 363
<211> 1848
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (976)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1845)
<223> n equals a,t,g, or c

<400> 363
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gacctcagtc acctattacc ggttggagga ggtggcaaag cgcaactcct tgaaggaact 180
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aggagaagag gttctgctgg aacaagctgg tgtagatgca agtgaaagct ttgaagatgt 300
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ccactttggg gcgaaaacta gagacttgct tgggggctgc agaagtgccc tctcctcgaa 600
tcctgccagt tgcattcttc cccccttggag ccaagacgat tggccagaca tcacctcaga 660
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa agggngga 1848

<210> 364
<211> 1808
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1808)
<223> n equals a,t,g, or c

<400> 364

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cggctgatgg ttagcccctt gctgcctgct ccatgtgtct tatgagagcc cgtagttaca 240
gtgtcctcta atttgaaatc cataagttaa caagtctata tcaggtgcag ctggctttga 300
ttaaaggcca tttttaaaac ttaaaaactc aacacctcac agattataat agaaaaagaa 360
atggcctcag tttgatctcg ttcagaatga cccagattgt ttctgctttg ggtgcagctg 420
tttagttcag agttatatta cagagaatta ttttctgaga taatcttaaa ctagaatgtt 480
caaaactaat tgataattga agtatcaaga tacgtagaac acctcagaga tttttcttca 540
ggaacttcca caaactttga atccttgtat ctttatttgg tattcatact actagtagca 600
aaatacaggt tttttgtttt gttttgtttg tggcttcata gagtatctca aattgaaact 660
tttctgcaca aagaataaaa ttaaggattt tataaactca aattggcacc tactgaatta 720
aaatacataa aatcatttaa atataattca gcatatggga agtaacattg cactaatatg 780
gaaatcactg ccagagacag tctattttct tttaatttgt tactacttag tcacaaaccc 840
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gttttaaact ttcttattgc ctttggctgt tgattagtac agtacaagtg cgatttcaaa 1740
aagatcttga aagtaatata tttaatcaat taaaatgttt atctgtaaaa aaaaaaaaaa 1800
aaaaaaan 1808

<210> 365
<211> 1280
<212> DNA
<213> Homo sapiens

<400> 365
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tgtacacagc cattccccag agtggctctc cattcccagg ctcagtgcag gatccaggcc 180
tgcatgtgtg gcgggtggag aagctgaagc cggtgcctgt ggcgcaagag aaccagggcg 240
tcttcttctc gggggactcc tacctagtgc tgcacaatgg cccagaagag gtttcccatc 300
tgcacctcaa cacrctgctg ggagagcggc ctgtgcagca ccgcgaggtg magggcaatg 360
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ccaacatcct ggaacgcaac aaggcgaggg acctggccct ggccatccgg gacagtgagc 660
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acaaggcaaa tgcccaggcc gcagctctgt ataaggtctc tgatgccact ggacagatga 840
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aaagaaaaaa aaaaaaaaag 1280

<210> 366
<211> 2138
<212> DNA
<213> Homo sapiens

<400> 366
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gtcaaggwga ctttataagg cacttaatgg acttgctaaa accagaactt gtccgtccag 180
ctacgacttt gtatcagcat aacttgactg gaattctaga aaccgctgtc agagccacca 240
acgcacagtt tgacagtcct gagatcctgc gaaggctgga cgtgcggctg ctggaggtct 300
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attaaaagca attatctttc agatgcaaaa aaaaaaaa 2138

<210> 367
<211> 3179
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (475)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2488)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3178)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3179)
<223> n equals a,t,g, or c

<400> 367
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cagcccasga gagccatagc agctgctggt gccaccgttc agcaggggtg agtgccctgc 180
ctgcagtcag gaggcttgtg cccgagctct ggaacaaatc atcacttagg atacagcttc 240
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tgacagggtt tttaagaaat aattattcta attgtttttg tttgtttgtt tttgccttgt 3060
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaann 3179

<210> 368
<211> 1826
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1799)
<223> n equals a,t,g, or c

<400> 368
tccccgggc tgcaggaatt cggcacgagg tggattcttg tccatagtgc atctgcttta 60
agaattaacg aaagcagtgt caagacagta aggattcaaa ccatttgcca aaaatgagtc 120
taagtgcatt tactctcttc ctggcattga ttggtggtac cagtggccag tactatgatt 180
atgattttcc cctatcaatt tatgggcaat catcaccaaa ctgtgcacca gaatgtaact 240
gccctgaaag ctacccaagt gccatgtact gtgatgagct gaaattgaaa agtgtaccaa 300
tggtgcctcc tggaatcaag tatctttacc ttaggaataa ccagattgac catattgatg 360
aaaaggcctt tgagaatgta actgatctgc agtggctcat tctagatcac aaccttctag 420
aaaactccaa gataaaaggg agagttttct ctaaattgaa acaactgaag aagctgcata 480
taaaccacaa caacctgaca gagtctgtgg gcccacttcc caaatctctg gaggatctgc 540

agcttactca taacaagatc acaaagctgg gctcttttga aggattggta aacctgacct 600
tcatccatct ccagcacaat cggctgaaag aggatgctgt ttcagctgct tttaaaggtc 660
ttaaatcact cgaatacctt gacttgagct tcaatcagat agccagactg ccttctggtc 720
tccctgtctc tcttctaact ctctacttag acaacaataa gatcagcaac atccctgatg 780
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cacgaataga catcaaactc aatgctttat ttgtaaattt agtgtttttt tatttctact 1380
gtcaaatgat gtgcaaaacc ttttactggt tgcatggaaa tcagccaagt tttataatcc 1440
ttaaatctta atgttcctca aagcttggat taaatacata tggatgttac tctcttgcac 1500
caaattatct tgatacattc aaatttgtct ggttaaaaaa taggtggtag atattgaggc 1560
caagaatatt gcaaaataca tgaagcttca tgcacttaaa gaagtatttt tagaataaga 1620
atttgcatac ttacctagtg aaacttttct agaattattt ttcactctaa gtcatgtatg 1680
tttctctttg attatttgca tgttatgttt aataagctac tagcaaaata aaacatagca 1740
aatggcaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaanc 1800
ccccgggggg gggccccccc cccctt 1826

<210> 369
<211> 839
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (112)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (179)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (809)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (829)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (831)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (837)
<223> n equals a,t,g, or c

<400> 369
tagtcatgga ggatttggta tgacttgacc acaggtttag accaaggctg agaagaacag 60
aagggagaaa ttaatggcaa aacaaaaaat acacaaatct gcggttttgg anttaatgaa 120
acaagattca tctatttaaa gaaatgttgg tgttctaata caaagcatta ttttcactna 180
gagaaaatta cttacttgct cccttctgta ttgtaatatt ttgtattaag acatgattta 240
aaatgtcttt ctacccttat ctcctctaaa ctgcaactra agttcaattc ttcatcatta 300
gtattttaac tctggcaaag gttatagaaa gaaaaatggr aatatggtag gcctgtggta 360
ttcttaaaag ctaagtcatt agaactatgc agatccccaa gtttaaaagt acaawtacag 420
caccagtagt tagctttcta gctgggggag aagacaggag atttttcttc cacagatgtt 480
tattttgctt cctgataggt actgcagcaa agccatgttg atgtgtagat gcatgacttc 540
ctcactaagc tgctgcacac cagctttgcc tgcatgattc aaatttgtgc ctcagtaaaa 600
ttataaatta ttgcatgtca taccttgaat aatggaaacg gcaaacatta aacctgtgat 660
tacccataat gtactttaat aataaaaaac atggcagcca ggtgcagtag agtgcacctg 720
tggtcaggag gctgaagtgg gaagattgct tcaacctgtg agtttgagtc ccgcctggtc 780
aacagcgaga ccccatgtgt ctgctgctnt ctcttttttt aaaggacana ngcttanct 839

<210> 370
<211> 2315
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1259)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1261)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1299)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2300)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2304)

<223> n equals a,t,g, or c

<400> 370
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atgttcaacc tgtatttgaa caagcattac caaatatcat tgaatattaa tatcttttgc 120
gtaaaaactg ctattatcag catcatagtt tctctaaaaa gaaaacttgg ggatcatagc 180
cgatagagag acttgctaaa atataaatca gcctctgcaa aactgtttac atatttattg 240
gtttacatat tttattggtt tatttctatc ccctgttcac tttttctctt ccacttccaa 300
ttatgaagag aaaatatttg ttcagggttg tccccccgcc ccccgtcact gcataatttc 360
tcctcttaca agctgctttt ggctttcatt aataacagct tccttttaga aggtctgata 420
aggrtattta aggaagraga gratgactct gttattaaag gtggctggrg actgtggrgg 480
gatatttttt waagcactac tcatatcctt taactaaatt ttgccaagcc sgasacaaca 540
ttaaggagaa attgtacctt aagttagtaa ttccaaatct atctgagttg tatacccatc 600
aaagacaata cagttattaa catagatgaa ggtatgctat aggcatcatt cattatctct 660
atattgaata ggtgaaagat aactgtagtc aggtgaaagg cattcattat ttttaagctg 720
aaaaggggat ccttgaaaac actgaaaacc tctacaacaa tcttcaggaa gcctgctatc 780
ttgggattca ctaataatag gccaagaaca aaggcaagca tccattcctc actccaccac 840
ttttctattt cagtgggtgt crttgctacg atgaagactt tggaaatttc ctttctcttt 900
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ataaacagaa ttttttgact aagcataacc aaatttcaga acagtctaat caatgccaag 1500
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tactttttgc tttatacctt tctataatat ttagattttt ttttactgta agtatggatc 2100
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aaacaggaac agcaaatatt tatatttttt ccatttttgct ctttttaaat ctatgtttag 2220
aactttatat cttgggactt atgtatatat ataccttttta aataaaataa attttctaaa 2280
taaaaagtta aaaaaaaaan gggnggccgc cctag 2315

<210> 371
<211> 3007
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2984)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2988)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3002)
<223> n equals a,t,g, or c

<400> 371
gccactcccc catcgtgggg cagctgcggc tgagggctgt ggctttggca gctgcgacgg 60
ggagcggcgg agaccgcctc tgctcccgcc tggggttgct gcttttgctc agaggacatc 120
catgacccta atggtctttt tgttcaagat aaagtgattt tttgcctttg ttgattaact 180
ggrcaaattm agcatgtaga gcrcatgaag tacaggacaa taaagcttcc tacacatatc 240
accaggagga tctctttgaa agattcactg caggactacc agagagaata atttgtctga 300
agcatcatgt gttgaaacaa cagaagtcta ttcacctgtg cactaactag aaacagagtt 360
acaatgtttt caattctttg agctccagga ctycagggaa gtgagttgaa aatctgaaaa 420
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tgctgtttta tataggtggt cacttggtac gagataatga ccatcctgat cactctagcc 540
gagaactgtc caagattctg gcaaagcttg aacgcttaaa acagcagaat gaagacttga 600
ggcgaatggc cgaaatctct ccggatacca gaaggcccta ttgatcaggg gccagctata 660
ggaagagtac gcgttttaga agagcagctt gttaaggcca aagaacagat tgaaaattac 720
aagaaacaga ccagaaatgg tctggggaag gatcatgaaa tcctgaggag gaggattgaa 780
aatggagcta aagagctctg gtttttccta cagagtgaat tgaagaaatt aaagaactta 840
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ttttgtaaag tttctagaat tttatatcat tggatgatat gttgatcagc cttatgtgga 2940
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cnggttc 3007

<210> 372
<211> 752
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (521)
<223> n equals a,t,g, or c

<400> 372
gttgacttgt actgaaggtg attttaaatt taagtatgta gtgtttgaat ttcttccatc 60
catgtcgttt taatgagatg tttccatgtc agctccttta cagccttggc tccyggctta 120
cagatttttg aatagttgtt tgcttgccag ttgttttaca tctttcattg gccaccaaaa 180
tattagccat ttgagatgag atgagactac ttgttgtacc ttcatctttc atttaatttt 240
ctggcgtaaa ttaacatttt aatttcatat atatctgtaa agagtctacc caaaggcttc 300
acggaaattt gcaaaatgaa ctaattccct tttaagcagc aggtgtgcct gtttttgact 360
tttcagtaaa tatgttgttt gtgcacatat ctacatggtg gagaccatat tcattatttc 420
atcttccaaa taatgggaaa aatataaaag tgaatcagtg tgctttggga attcagtgaa 480
atcatgttaa ctcatataga gggggcctta gtttatctct nctttactga attaattagt 540
tttggaaatt cttttaccat taaaaaaaat taaggaccat acagagaatg atttaagaaa 600
aaacaagtca cttaaaaatc atcacctatt tataaactgt attaattaca cataatgctt 660
attgattcaa tgaggtttct ctaaagactt ctgcttaata aatatggctg gacttcattt 720
aaattagttt aggactattg tagggatggg ag 752

<210> 373
<211> 712
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (11)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (560)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (638)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (682)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (683)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (708)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (711)
<223> n equals a,t,g, or c

<400> 373
gagagcctat ntcctagttt ctcccaatgt tatatttaat tttaaaaaat tgatatgaaa 60
atgtctaatg tatagtaata atttatgaca gatctagtca tttcttccta ttaaaaaaga 120
ttaccttatc tccagtagga aatggaattt tatgggcctt taaaagaaag ttttatgaaa 180
cttgatgcta taattttatt ggtatttcaa ggggaaaaaa gcactggggt tcaaaaatgg 240
tagcagaact gctttgaaat gctgcaaggt ggccactaga tgatgcaaaa tacaaccaaa 300
agattgactg agaataaaat taggtgacaa gggtttttaa agaataacct tttaaagtgt 360
gggggcaggg gttgcttttt tttattttat ttaaagtcaa ttatatttta catcttacat 420
ttctaaaagc attttataat tatttttagt aagatttttc ttaaaatttc atatactggt 480
ttctacaatt tatatttgaa atttctcagt gttatgtaaa gagtgatgga aaagcattga 540
tttctttaaa accgtaatgn ttttagaact taagcctata gggcctttct tacaatggtg 600
atgtacccat tatcttagaa aatctagttt aaacctgntt tctttccccg caaaagaatt 660
aaatggggaa aatccatttg gnnatcctct taagttattc ctaattangt ng 712

<210> 374
<211> 1807
<212> DNA
<213> Homo sapiens

<400> 374
ggcacgagtt atggattacc tagatatcgg tggcttactc atgcttggaa ttttttttcag 60
agagagttta agtgctgtgg agtagtatat ttcactgact ggttggaaat gacagagatg 120
gactggcccc cagattcctg ctgtgttaga gaattcccag gatgttccaa acaggcccac 180

caggaagatc tcagtgacct ttatcaagag ggttgtggga agaaaatgta ttcctttttg 240
agaggaacca aacaactgca ggtgctgagg tttctgggaa tctccattgg ggtgacacaa 300
atcctggcca tgattctcac cattactctg ctctgggctc tgtattatga tagaagggag 360
cctgggacag accaaatgat gtccttgaag aatgacaact ctcagcacct gtcatgtccc 420
tcagtagaac tgttgaaacc aagcctgtca agaatctttg aacacacatc catggcaaac 480
agctttaata cacactttga gatggaggag ttataaaaag aaatgtcaca gaagaaaacc 540
acaaacttgt tttattggac ttgtgaattt ttgagtacat actatgtgtt tcagaaatat 600
gtagaaataa aaatgttgcc ataaaataac acctaagcat atactattct atgctttaaa 660
atgaggatgg aaaagtttca tgtcataagt caccacctgg acaataattg atgcccttaa 720
aatgctgaag acagatgtca tacccactgt gtagcctgtg tatgactttt actgaacaca 780
gttatgtttt gaggcagcat ggtttgatta gcatttccgc atccatgcaa acgagtcaca 840
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actaattaaa tgctaacata ggaagttaga aaatactaat aacttttatt actcagcgat 960
ctattcttct gatgctaaat aaattatata tcagaaaact ttcaatattg gtgactacct 1020
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aaaaaaa 1807

<210> 375
<211> 1815
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (201)
<223> n equals a,t,g, or c

<400> 375
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aatgagggag ttcgggagaa ggaaaactcg gaccgactgg agtggatcca ggcgcacgtg 180
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tcctcttcaa tgacttcctg cttcttacct acatggtcaa gcagtttgct gtttcctctg 360
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aaaaaaaaaa aaaaa 1815

<210> 376
<211> 550
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (483)
<223> n equals a,t,g, or c

<400> 376
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ggttctcagg 550

<210> 377
<211> 3202
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2957)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3119)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3192)
<223> n equals a,t,g, or c

<400> 377
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ccaagtctga accgagacct ccaatttcct ctccgagggc tccccagacc agagctgtca 180
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cgactcaggt tggcaaaaaa gcaggaaaga tgtaaatcag cagaaaaaaa acaccgagac 540
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acccaattcg cnctatagtg aa 3202

<210> 378
<211> 2401
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (179)
<223> n equals a,t,g, or c

<400> 378
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tatgtacagt tctctgtgtt aacagctgag aagtaagcaa ccttttctga ctgcatatng 180
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a 2401

<210> 379
<211> 852
<212> DNA
<213> Homo sapiens

<400> 379
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cggagcccct gcgccttttc cttgctcggg tcctgcgtcc gcgcctgccc cgccatgaat 180
gaggagtacg acgtgatcgt gctgggcacc ggcctgacgg aatgtatcct gtcaggtata 240
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gctaatggtc agctggttaa gatgctgctt tatacagagg taactcgcta tctggatttt 480
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cctaagaaga ccacaatgcg agatgtgtat aagaaatttg atttgggtca agacgttata 720
gattttactg gtcatgctct tgcactttac agaactgatg attacttaga tcaaccgtgt 780
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gatttacatt cc 852

<210> 380
<211> 2014
<212> DNA
<213> Homo sapiens

<400> 380
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ccagtcggtt ttctttcatc ttgtagtttt tacagtattt ccactgtgca tatgcaaaat 180
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tcttgctgtt gcccaggctg gagtggagtg cgtggtgtga tctcggctca ctgcaaactc 300
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa 2014

<210> 381
<211> 565
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (557)
<223> n equals a,t,g, or c

<400> 381
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tgaactggcc cagcttngga gacct 565

<210> 382
<211> 131
<212> DNA
<213> Homo sapiens

<400> 382
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 120
aagggcggcc g 131

<210> 383
<211> 2026
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2026)
<223> n equals a,t,g, or c

<400> 383
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tagttgctgt ttggataaaa gttgatgtgt gatttttat taaacaaata gtaaaccctt 780
caattatagt tagtcttggt gaagtaagat gtttgtagac tttagagttc tttaattctt 840
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aaaaaacact attttactta aactgtttct tatctaaatt cttgcagagt gtcaatgtta 1380

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tcattgatta tagaagacag ggataatacc tttatctctg gccactcaaa aatgcagtgc 1440
caggagtgct aaacctagag gccaatactg atgacctgga aggtgatcca tatgattgtc 1500
accacaaagt gcttttacac aaaaacttga aaatttgaaa aacatgattt ttttaagttt 1560
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaan                2026
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<210> 384
<211> 1346
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (249)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (251)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1334)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1342)
<223> n equals a,t,g, or c

<400> 384

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gccgccgccg ccgccatgca ggaaatcatc gccagcgtgg accacatcaa gtttgacttg 180
gagatcgcgg tggagcagca gctgggggcg cagccmctkc cscrgcagac acagcctcca 240
gcaaagcana naaccccgca ggtcatcggg gtcatgcaga gtcaaaacag cagcgcgggc 300
aaccggggac cccggccact ggagcaggtc acctgttaca agtgtggcga gaaaggacac 360
tacgccaaca gatgcaccaa agggcacttg gcctttctca gtggacagtg acagcagctg 420
gagccagctc cgagcagccc gggggccccg ctgttgggag tgtgcattta actgtttcat 480
gcgcttgttg gcgcgactgt ggctcgagct ggcccgcaga cacgtgggtt tcatcactct 540
gaggggccac gtctgttagt ttcctatcat tttgccttag tattttttga aaaagggaca 600
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tgggactccc ggcacaactc ccctcatcca gggagggagg cagctgctgg ggaggggctt 720
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gcaaattcag gtgcccccat tgcctcaggc tggccctggt cccaggtggc agcggttgag 960
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aatggattaa agcttgtttt ttaaaaaaaa aaaaaaaaaa ytcggggggg gscccgtacc 1320
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<210> 385
<211> 637
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (637)
<223> n equals a,t,g, or c

<400> 385
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tgaaacacag gcagtatgag agaaagcaag gcccgtcatg ctgtccgtac actacgtatg 120
ctgtagagcc attttgtatg ttgtgtaaaa caaaaagcat tgatgaaaaa gcaaaaggtg 180
atgtatgtat atgagaaaat taattgtacg atatcattcc agtacgtttt gttgtacatt 240
ttagtcttgt ttactttctc ttcattgtta agaggatgcg aactgtacag tttccagcta 300
gttacccata ttagagaaga aataagagag tattagaaga aaacaggaga gaaagaacat 360
ttgtgaattg cagttgtcaa aaaaaaaaaa tagcctagct ggccttattt gtgaagcata 420
attgctttta gcatatggaa gtattttttc acattttctt tgtataaaat ttgtattaaa 480
cttaaatatc tttttgatgg tggtgtttct ttgtgactga gccagtagac tcacactata 540
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cttttttttaa ttaaactgtt ttggaaaaaa aaaaaan 637

<210> 386
<211> 862
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (723)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (760)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (780)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (809)
<223> n equals a,t,g, or c

<400> 386
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cagagcgggg ccgggaggga gggggaagag gcgagagcgc ggagggcgcg cgtgcgcatt 120
ggcgcgggga ggagcaggga tcttggcagc gggcgaggag gctgcgagcg agccgcgaac 180
cgagcgggcg gcgggcgcgc gcaccatggg ggagaaaccc gggaccagct caccgtgtac 240
ttgggcaagc gggacttcgt agatcacctg gacaaagtgg accctgtaga tggcgtggtg 300
cttgtggacc ctgactacct gaaggaccgc aaagtgtttg tgaccctcac ctgcgccttc 360
cgctatggcc gtgaagacct ggatgtgctg ggcttgtcct tccgcaaaga cctgttcatc 420
gccacctacc aggccttccc cccggtgccc aacccacccc ggcccccccac ccgcctgcar 480
gaccggctgc tgaggaagct gggccagcat gcccamccct tcttcttcac cataccccag 540
aatcttccat gctccgtcac actgcagcca ggcccagagg atacaggaaa ggcctgcggs 600
gtrgactttg agwtcgagcc ttctgtrcta aatcactaga agagaaaagc cacaaaagga 660
actctgtgcg gctggtgatc cgaaagtgca ttcgccccgg agaaaaccgg gccccagctt 720
tanccgaaaa caaaaggcat tccttcatgt ctgaacggtn cctggaactt cgaaggtttn 780
ccttggaaaa aggagctgta cttaccatng gggagcccct tcaatggtaa aatgttccaa 840
gttaaccaaa aaaatttcaa cc 862

<210> 387
<211> 585
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (375)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (474)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (573)
<223> n equals a,t,g, or c

<400> 387
gctgcaaaca aaaagaatga agctcgactg agaattgtaa aaactcttga agacattgat 60
ctgggcccta ctgaaaaatg tgtgagagtc aactcagttt ccagtggtct ggcggaagaa 120
gacctagaga ccctttttgca atcccgggtc cttccttcca gcctgatgct accaaaggtg 180
gaaagtcctg aagaaatcca gtggtttgca gacaaatttt cattccactt aaaaggccga 240
aaacttgaac aaccaatgaa tttaatccct tttgtggaaa ctgcaatggg tttgctcaat 300

tttaaggcag tgtgtgaaga aaccctgaag gtcgggcctc aagtaggtct ctttctagat 360
gcagtcgttt ttggnaggag aagactttcg agccagcata ggtgcaacaa gtagtaaaga 420
aaccctggga tattctytac gcccggcaaa agwttkttgt catagcgaaa cctnttgggt 480
ctccaagccg tagatctggg tgtacattga ctttcgagat gggagctggg gcttgcttag 540
gacagttcac ggaggaaggg agccgccatg ggnttttcac tgggt 585

<210> 388
<211> 591
<212> DNA
<213> Homo sapiens

<400> 388
gtgatctgca tgtggcaggg ctgcgcagtg gagcggccag tgggcaggat gacgagccag 60
acccctctgc cccagtcccc ccggcccagg cggccgacga tgtctactgt tgtggagctg 120
aacgtcgggg gtgagttcca caccaccacc ctgggtaccc tgaggaagtt tccgggctca 180
aagctggcag agatgttctc tagcttagcc aaggcctcca cggacgcgga gggccgcttc 240
ttcatcgacc gccccagcac ctatttcaga cccatcctgg actacctgcg cactgggcaa 300
gtgcccacac agcacatccc tgaagtgtac cgtgaggctc agttctacga aatcaagcct 360
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gcagaagcca taacagcacg gaaktccagc gtgyttgtgt gcctggtkga aactgaggag 540
caggatgcat attattcaga ggtcctgtgt ttttcttgca ggataagaag g 591

<210> 389
<211> 1096
<212> DNA
<213> Homo sapiens

<400> 389
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tggccaagaa gcagtgggat agtgtggtac tggagcgcat cgagcaggcc tgtracccag 120
cctggagcgc tgatgtggcg gctgtggtca tgcaggaagg cctcgcccat atctgcttag 180
tcactcccag catgaccctc actcggccca aggtggaggt gaacatccct aggaaaagga 240
aaggcaattg ctctcagcat gaccggccct tggagcggtt ctatgaacag gtggtccagg 300
ctatccagcg ccacatacac tttgatgttg taaagtgcat cctggtggcc agcccaggat 360
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tcatcagcga tgagctcttc aggcatcagg atgtagccac acggagccgg tatgtgaggc 720
tggtggacag tgtgaaagag aatgcaggca ccgttaggat attctctagt cttcacgttt 780
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mamrtaaaaa aaatgc 1096

<210> 390
<211> 448

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (76)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (132)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (394)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (439)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (447)
<223> n equals a,t,g, or c

<400> 390
tcggaggacg cgaaccggca cgctgcgcct ttaaggagtc cggctgggct gggcgccgga 60
gctgggagcc gcgcgngtag gagcccggcg caggtcccca gcccggggct agagaccgag 120
ggccggggtc cnggcccggc ggcgggaccc aggcggttga ggctggtcag gagtcagcca 180
gcctgaaaga gcaggatgga tcttgatgtg gttaacatgt ttgtgattgc gggcggcacg 240
tggccatccc aatcctggca tttgtggctt catttcttct gtggccttca gcactgataa 300
gaatctatta ttggtactgg cggaggacat tgggcatgca agtccgctat gttcaccatg 360
aagactatca gttctgttat tccttccggg gcangcctgg gcamaaamcc tccatcctca 420
tgctccacgg attctcttnc cacaagnt 448

<210> 391
<211> 1451
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (17)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (18)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1429)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1440)
<223> n equals a,t,g, or c

<400> 391
gtcgacccac gcgtccnncc acggtccggt ggggagaagc cgggaggact gggtgcgcct 60
gcagggatcg gaagccggtt ggggtgtgag aggttttctc gctctaggga gattcttcaa 120
gcaatcacta tgtcaacaga cacaggtgtt tcccttcctt catatgagga agatcaggga 180
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tgctgtcttg gtcttgttgg aggagcttgc tttagttaga tgtcttatta ttaaagttac 480
ctattattgt tggaaataaa ctaatttgta tgggtttaga tggtaacatg gcattttgaa 540
tattggcttc ctttcttgca ggcttgattt gcttggtgac cgaattacta gtgactagtt 600
tactaactag gtcattcaag gaagtcaagt taacttaaac atgtcaccta aatgcacttg 660
atggtgttga aatgtccacc ttcttaaatt tttaagatga acttagttct aaagaagata 720
acaggccaat cctgaaggta ctccctgttt gctgcagaat gtcagatatt ttggatgttg 780
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aaaaaaaaaa a 1451

<210> 392
<211> 1425
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (48)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (1332)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1381)
<223> n equals a,t,g, or c

<400> 392
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gaaaatggct ctcctaaaag gaccagttgc catcatccac agtggaagat tcaaagcagt 120
tggtccttgg tacgtatgag aagcggattt cattcccttg aattctacag agcagtttat 180
tagagtgaat gcattttaag gccttgcatt tgatatgtca tccagttcat aatcaagttg 240
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<210> 393
<211> 4755
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (124)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2562)
<223> n equals a,t,g, or c

<400> 393
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ggcggcaaca tcgagctctt cgtcttcttc aacggcgcgc tcgagaaagg cccggctgca 120
cgantgggtc aagcggcagg gcaacgagcg ccaracggca cagcagatcg tmagccatgt 180
ccagaacaag ggcaccccgc cgccaaaggt ctggttcctg ccgcccgtyt gcatggccca 240
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ctctgattat gcactgtgca acatccccta ctatttcagt gcccatgccc taaaactgag 420
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ggacctgaat ccaaatcgtt ttcctatttt tgctgctctc ttaggaaatc acattctgcc 540
tgatgaagat ctggcttcct ttcattggag tttacttggt ccasaacatc cactagcctc 600
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ccactgcctc ttcaggaagc caactagccg aagcaaggga agccagatgg gcactgtcca 1380
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gatgtacccc tacatcttcc atgtcctgac gaagggtgaa atcaaaattg ctgtttctat 1560
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<211> 2732
<212> DNA
<213> Homo sapiens

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<222> (699)
<223> n equals a,t,g, or c

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<213> Homo sapiens

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<221> misc feature
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<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (1263)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1285)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1343)
<223> n equals a,t,g, or c

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<211> 1403
<212> DNA
<213> Homo sapiens

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ttctgtgcct tagtttctcc actcgtaaac aatttcctat aaaaattgtt taaacaccaa 360

ccaaaattta ccatatgtat tcattctctt gccttaaaga tcacttctta acttacattt 420
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<210> 402
<211> 2387
<212> DNA
<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1316)
<223> n equals a,t,g, or c

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<210> 403
<211> 4062
<212> DNA
<213> Homo sapiens

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<222> (111)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (4061)
<223> n equals a,t,g, or c

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<212> DNA
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<222> (11)
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<220>
<221> misc feature
<222> (25)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (734)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (746)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (767)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (769)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (820)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (849)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (854)
<223> n equals a,t,g, or c

<400> 404
ccctcactaa nggaacaaag ctggngctcc accgcggtgg cggccgctct agaactagtg 60
gatcccccgg gctgcaggaa ttcggcacga gtgaaagatg agtggttgga gaagtttaat 120
ggttttcaaa tgcttttttt ttcagtcttc aaataagtgt ttacgtagaa gcaccatatc 180
tgaaacaggt gacagtggac cagtctgaat gaaatgaggg ttggcaggcc tgagctccaa 240
aaccttctga ttgcccaagc cctccttgtc ttgcttggat tatctccaca caaatggaga 300
aactggacaa ggtggtcatg gaggtccctg aaagctcaaa gactttctca ttccaggatt 360
ccccatgttc atatgccagc atggcatggg ggtgctctgt agtcaagcag ggtcctttgg 420
ggggcttagg gatggagcca ggaaatggct ctgggactca gcgggtgtcc agagtctcat 480
cagcagggtt tctttacttt cactgagtgg ctggtgcctg cacactgagt tttgcaggct 540
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tgtgtgctga ctggtgccgt gagcacccca ggccctctcc ccatgctgct gatggtcagc 660
tttctctgca cgctcgtggt tgccacagtc aacgctgata aaaatgctga tgcagattgc 720
ctgcccaact tgcnagtgct ggcacnggac ccagcaagcc caaaacngnc accttggaaa 780
gtgggttggg gcttgaatta attggcaatc aatcttccan ttgggcccta actcgggttc 840
ctttaaaang gccnttattg g 861

<210> 405
<211> 1030
<212> DNA
<213> Homo sapiens

<400> 405
cgcgtcctgc ctgcagagag ccaggccgga gaagccgagc ggcgcagagg acgccagggc 60
gcgcgccgca gccacccacc ctccggaccg cggcactgct gacccgccat cgccatggcc 120
cgcgggaaag ccaaggagga gggcagctgg aagaaattca tctggaactc agagaagaag 180
gagtttctgg gcaggaccgg tggcagttgg tttaagatcc ttctattcta cgtaatattt 240
tatggctgcc tggctggcat cttcatcgga accatccaag tgatgctgct caccatcagt 300
gaatttaagc ccacatatca ggaccgagtg gccccgccag gattaacaca gattcctcag 360
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ctgaacatag ttaggttcct ggaaaagtac aaagattcag cccagaggga tgacatgatt 480
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cgaggagagc gaaaggtctg cagattcaag cttgaatggc tgggaaattg ctctggatta 600
aatgatgaaa cttatggcta caaagagggc aaaccgtgca ttattataaa gctcaaccga 660
gttctaggct tcaaacctaa gcctcccaag aatgagtcct tggagactta cccagtgatg 720
aagtataacc caaatgtcct tcccgttcag tgcactggca agcgagatga agataaggat 780
aaagttggaa atgtggagta ttttggactg ggcaactccc ctggttttcc tctgcagtat 840
tatccgtact atggcaaact cctgcagccc aaatacctgc agcccctgct ggccgtacag 900
ttcaccaatc ttaccatgga cactgaaatt cgcatagagt gtaaggcgta cggtgagaac 960
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agtgattcca 1030

<210> 406
<211> 2428

<212> DNA
<213> Homo sapiens

<400> 406
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atgaaacttg gaggcttaca ggtatagaca gctttcagct acagcacatt ctaatttttt 120
attttgttta gttcttttgt attcacttct ggtctcttta agactgtttt aaaagaaatc 180
aatttaggga accccagtta tataatataa actttgtaat ctgagagaaa aaatgtatag 240
taaatctaag tcttgatttt taactttcta ttgtaaaaaa taataatata cagagtttaa 300
tagaaggtga tgttttggtt ttgttttccc agaggctgcc atatggtctt tgagtacggg 360
gatgtcccaa actggcccac caatgagcat ggcggctccg gccaggaatg ccagagttag 420
cctcccaggc ttgcgggtgg acatgcctgc tccctgccag cctccagtgg cctggccagg 480
ccytcccgag cctgtctgcc ctccccaggg gtggaggagt ctctgggccc caggaggatt 540
ccctcccgga gactcgcacg gtgctccctg ctcacgcgtt gtcacagtta gtccggaaat 600
gactgaaacc aggcattctc ccggacctca gcgtggggga gcctccaggc agacgctggg 660
tatggagctg tggtgtggtc tgtcctgtat ggtggccagt gctttctgcc agcatttctg 720
gatggatata gggactatca ttagtatcct aatacacggt gattttaaaa caaccataaa 780
attgattcag agtccactga cccttacaga tgtaggtata cccttactgg agagggaact 840
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tgagttttca gccagtttgt taaactttta attaagtttt gtttataata aaaatataaa 960
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gatctttaat ggactattta aaccgaattt aaggaattca cacacgacag ttgacaggtc 1080
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ctgagacctg tagggcagct tctaacatgc ttttttcaag gggagaggag tagtgacaag 1620
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gcttcgggcg tgaactgaac tccagacccc tctttgtgtt gggcagtgtc atcttgctta 1740
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acgcctctga cagtcttttg ggaaagagta acacccacat acagaatttg tcacatccag 1860
agtagcactg ttccttaata ctggcataat gcttccagga agtttttctt ttttatattt 1920
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tagtgccgtt tctagtatat tcctgtaaat gtcagttact gaaaatgagt ccaatgtaag 2040
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tactctttga tgtttctggt aatcatggac ccttctcctg gggcatttgt tttgttttca 2160
taataaaaag caaaaaaaaa aaaaagactg tttttttttt gcattttcct gtgctttctg 2220
tgggggctcc cagcctctct cctggagcct ggaaatgtct ggaagcacct ggtctggaac 2280
agccttcact ggtccacagc aagggtgctg agctccccac acttgacatc ctgtaactct 2340
tggcaaaaac acccagagca tccaaaaggg gccccaaaaa accatttaaa ggcaggatgc 2400
agtggctcgt gcctgtgatc acagcacc 2428

<210> 407
<211> 2047
<212> DNA
<213> Homo sapiens

<400> 407
ggcacgagat gaaatgggcc acaactttgg aatgtttcat gacgactatt cttgcaagtg 60
tccttctaca atatgtgtga tggacaaagc actgagcttc tatataccca cagacttcag 120
ttcctgcagc cgtctcagct atgacaagtt ttttgaagat aaattatcaa attgcctctt 180
taatgctcca ttgcctacag atatcatatc cactccaatt tgtgggaacc agttggtgga 240
aatgggagag gactgtgatt gtgggacatc tgaggaatgt accaatattt gctgtgatgc 300
taagacatgt aaaatcaaag caacttttca atgtgcatta ggagaatgtt gtgaaaaatg 360
ccaatttaaa aaggctggga tggtgtgcag accagcaaaa gatgagtgcg acctgcctga 420
aatgtgtaat ggtaaatctg gtaattgtcc tgatgataga ttccaagtca atggcttccc 480
ttgccatcac gggaagggcc actgcttgat ggggacatgc cccacactgc aggagcagtg 540
cacagagctg tggggaccag gaactgaggt tgcagataag tcatgttaca acaggaatga 600
aggtgggtca aagtacgggt actgtcgcag agtggatgac acactcattc cctgcaaagc 660
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aggacggata gtgactttcc tgacatgtaa aacatttgat cctgaagaca caagtcaaga 780
aataggcatg gtggccaatg gaactaagtg tggcgataac aaggtttgca ttaatgcaga 840
atgtgtggat attgagaaag cctacaaatc aaccaattgc tcatctaagt gcaaaggaca 900
tgctgtgtgt gaccatgagc tccagtgtca atgtgaggaa ggatggatcc ctcccgactg 960
cgatgactcc tcagtggtct tccacttctc cattgtggtt ggggtgctgt tcccaatggc 1020
ggtcattttt gtggtggttg ctatggtaat ccggcaccag agctccagag aaaagcagaa 1080
gaaagatcag aggccactat ctaccactgg caccaggcca cacaaacaga agaggaaacc 1140
ccagatggta aaggctgttc aaccccaaga gatgagtcag atgaagcccc atgtgtatga 1200
tctgccagta gaaggcaatg agcccccagc ctcttttcat aaagacacaa acgcacttcc 1260
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aagcaacagc taagcaagaa ctaatggcta aattatcaac ttggaaaact ggaaaatctg 1380
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ttctgattca tgttagactt tgaagagact aaagaaaatt ttcaagagga acatatgcct 1500
gagaaccttt gcatgaattt aaaatttcaa ttatccattc ttataagaag gaagatgatt 1560
gtaaagaaat atctccgaag ttaaaatctg taataggaat tgattcattc tctaatgaaa 1620
acaaaacata aaaacatcac actaatcttg gaggaataag aaaaattgta catccattaa 1680
atgtacaatt gattgcaaca tcttgattgt tttaaccatt aacttgtcaa attacaatca 1740
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aatcattatt agctatatca tttgaggttt tctacaattt ggtataacta agaatttaaa 1860
aatgttttat catatatatt tgtataatta attactggca tggttaaagt ggttttcact 1920
ttttaaatgg agaaaatttc agttaaatta ataggataaa ccaggttgcg aactggtgac 1980
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aaaaaaa 2047

<210> 408
<211> 892
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (33)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (855)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (868)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (891)
<223> n equals a,t,g, or c

<400> 408
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cgcgtccgga tgactgtaat tctccttgtt accgacgaga gatcattgga agctgccttc 120
taacactttg tgtagctctg tggagttgga ttttcttaag gtttaaaaag aatcacagct 180
tcggaacttt taactgaaaa tgagagacag aagccacagg ggaagcaaag caaataggat 240
tttcaatata aatatcagtg tggaaaaata acctattctg ttgaatttag tgttcatgca 300
cttgagaaca acattatttc catttactcc gaaaatcctt ctgtgggggt ttgagaaagt 360
gaatgttgca gacatgttct gttgtgttgc actttatcct gtgtttatgt gtatgtgttt 420
ttagattaat tcaagttgtg tgctatattt cttgtataat ttacaaagtt acacaaaata 480
taaagagcag taaacttgtc tgaaagtttt tggcaaagga aggtaacttc aatgtaatag 540
cttcctttaa gagtacagga aaatgcattc tgtaatgaag tggggcccat gtaattgttt 600
atattttcag ttttaagcag gtatagtgca ggcttgttag gaatgtgtgg aagggaagat 660
tggaagtgat ttttcctctt ttaaaagtaa acaaaattct tcaaatatgc cctagttaac 720
tatttcagca taccattttt acttggttaa cagtgtacat tttgataacc tatcaggaat 780
gaataaagta tttttattta aaggtgaaaa aaaaaaaaaa agggcggccg ytytagagga 840
tccaagcttg cgtangcgtg caaacganat caggagtcga tgagtagctt nt 892

<210> 409
<211> 696
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (675)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (676)
<223> n equals a,t,g, or c

<400> 409
ggagtagttt acagctattt ttttttctta ctggtaatct taactaatat gattcccttg 60
ttagagagcc tctcactccc ccacccccaa aaatgtctac tattcatgac agtaaccaat 120

tattctggac aaattgcttc tttttaattt gagctatctg ccatggactt tctaaaatgg 180
aaacacagcc tgagtgtatc ttagggagag tttgattgaa aaaatccaaa tcactatcca 240
tatagatcat ggatataaag agatacctga tttttattaa aaagatactt tttcaaattt 300
aagagttaat cttggaaatt tggaacaagt aaaggggcaa gtaaaccttt tgatgaaata 360
taaaaggaac tcattgcatg aagttgacta tcaaattctg tgatgtgtgg cttcttaaaa 420
atattctcag tgtcttttgt gtgcgtgcag catgtacatt tgatgttatg tgaatgttga 480
gtttttcttt ctaattttca cttcagcagt gtttagggct tcagatgcct tattccagtg 540
tgaacagaaa aagttcatat tttatgtggt taatgctttg atgtgtcaca taaagagtag 600
tttgtagaaa atgttggcac aattttaact tcttagtggc tgtgacatta tatattatat 660
atataraaac tatannaaaa aaacaaaccc gggatt 696

<210> 410
<211> 1885
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (741)
<223> n equals a,t,g, or c

<400> 410
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caaatgggac aacaggttag aggaagtcag gcagatttcc agcatcatag agagtaaagg 120
accagggaag gatcaggatt caaggactgc acccaggctc tgcttccakc ttgctgtgtg 180
actttgggta attttgttcc cttagggaac tgagctttct catttgtaaa tgcaaacagg 240
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cccatttcct cattctgcaa attgcaaacc tgagggccca aagagggaca ggggcttgcc 420
caggtctcag caggctgtga gcaagagcta aagcctaatc ctcctgcctt tgggcctgga 480
gccttccttg taccccaggg gtcagtgtct ttgttggata caggcttaga ttgactgact 540
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tgatggagga agaccctgct gtgttgagat gagcaccaga gccaagaagc tgaggaggat 660
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ggacccagga gagccggact aggaccaggg ccctgggcct ccccacactc cccatggaga 840
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tcgacgagag cgcggtggcc gagagcagag aggagcggat gggcggcgcg ggcggcgagg 1680
gcagcgacga cgacacctcg ctcacctgag cgccgcaccg cttcagggac ggagacagga 1740

ccggcgagcc ctggggcggc ggccgctcct gcactttctc ccctccccca cccggcacct 1800
ggtggcaccg ggccaggccc aggcgggtgc tgcagcctgg ctggacagag ccccaataaa 1860
cgatcccaca gcctcaaaaa aaaaa 1885

<210> 411
<211> 584
<212> DNA
<213> Homo sapiens

<400> 411
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aaacaaactt tttgaaaagc tgtttctaaa agattcctta aattcagata tgacagctaa 120
ttacctcatc ataaattact tttatactaa ttgtttccag ggttttagag tagttgaatg 180
tttatttcac aaggcaccct aaattctata gaaataaaac ctcagatgag tctccttctt 240
agagtgttac aatgaatggg agtttacaac ttttatgtgt catgtttcca acagctgtgt 300
ttggggtggt cactggcagg aggggaccgt atctcagaat ggcacattat ttctatttta 360
cacatgagca aattgaggca tagagagtta gataacttgc ccaggttaca cagattgtaa 420
gttgatgaag ctgggatttg aatcttcaca tgtgtgtact tataaataca aatgtaagga 480
aaactctagt gagtccacct cttatattga gttattactg tgtgagtgcc aagtwctgtt 540
ttagatgctt tacatatact attttgttta atatcctttt taaa 584

<210> 412
<211> 1412
<212> DNA
<213> Homo sapiens

<400> 412
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cagccagaga gccaaattag agggctggct tccctatcac acagaataaa tgctagtgct 120
agccaatgat ccctttgctt ttaatgtata gaaaatactg ttgttccttt tgtcatttcc 180
agtgacatct gttttctaag cagctctttt ctagggagga aaccaaaggg gctaggttaa 240
gaccctaata gaaatgtttt ttctaatctc tggtgagtct ggaagtgtca cattcacagt 300
ccacccttgg gagtggcttg gtggagctgg ggacaaggtt ttgtttacta catagtgcac 360
atgataaatg gccttaaact gtgattcttt ctggtaggat aagttataat aaactgaccc 420
taaagaatgc aatggctttt aaactgcagt tactgtgttc ttaatgaagc aatacccaaa 480
gctctgttct tttggagcac ttgaggggag cttgaatgaa aggtgcagat aagagcagta 540
ccttgatctt atgctttctg agtgtcctgc cttgttgcca tctgcatgga tgagtgaatg 600
cttctatgca cgaggagact caagccaact cagagtctgc tttttccaac gctcttccca 660
ggtttctttt gcaaagcttg gtcatttggc ccaggtcttc ctggaaagtg gagtacatgt 720
cactgactag ggtggcgtgg tgtctttacc cttaacatta agtcttgtta cctcagtgat 780
gtgaagccaa tggttggaat tataaaaagc atccttgctg gttcttcaca ggacactgga 840
acccaccctg tcaattcagc tagcatgtcc acacagtctt gatgatccct ctctgtaaca 900
ggcagctaac attaagagaa gggggaaaga gaagaagaga gcaatagctt atgggagagc 960
tgagatctta cttcgttgac ccatattttt cccctgacca agttacctgt aaactggaat 1020
ttgcaagggg atgctgtgat gataacccct ttctattgct gtaatgttca tataacctgg 1080
gaaactgaga gaaggggatg tgtaaataaa agcttaaaca ttttagtaat gtgttaaaat 1140
gtcactctct cttaccctgt ttcccttttt tgccagatga tgattttttt atttttattt 1200
tgtactttac tggatgactg tgaagcgatg agtattgggt tggggtaggt gtgttgattt 1260
tgagagtgca tgttaagaac tgaaggggaa ctacttgaga tgacttaaga agcatcccat 1320
gcaaatatct tgttttgccc taataaaata ttcagaaaga taaaaaaaaa aaaaaaaaaa 1380
aaaactcgag ggggggcccg gtamccaatk cg 1412

<210> 413
<211> 364
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (363)
<223> n equals a,t,g, or c

<400> 413
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gctggaattc tactcttcac ttactgcatt gactgttgtt gattagttat tattgcaaag 120
cactgtcacc ggcctcaggg agtttatgtg taatagaatt aaaaataata gctgtgtata 180
acacttagct caagccacgc atgtgtgagg catttggtat gtatctgaat taattctcac 240
taaaattcag caaaggactt gatagcctct ccccgccttt tcaataaagg atgaatgaag 300
gttgaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaacccc gggggggcc 360
ccnt 364

<210> 414
<211> 1333
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1140)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1196)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1210)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1246)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1285)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (1287)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1306)
<223> n equals a,t,g, or c

<400> 414
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gggagtcggc ctctgcatcc tcaataacaa gatcagatac tcccactcac caggtgctta 300
ctgtggcagg tgcagggctg agcatgggac acacattatt tcctttaatc ctgtaaggga 360
gataccagct ccattctaca gatggcaaaa ctgaaaccca gagaggttta gaaacttgtt 420
gaaggtcaca tatgtcctaa gtggaaaggc tgtctagctc caaagaccat gcacttgacc 480
cccacaccag ctagcttaga aggtccaaac actatttggc actaccagat ccttccactt 540
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tcccgggccc tgg 1333

<210> 415
<211> 3146
<212> DNA
<213> Homo sapiens

<400> 415
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ccaattcgaa ttgcctgtgg caaggagtgt tggccattgg gaaatatcat aggtgttggc 180
ccccagtgta gagttatgtt cataagtctt tgagttggaa acctttactt tccttcataa 240
gtccatctat tcctataaca ttcttaagaa atgttacttg ggttatggtc aacttatgtc 300
gccacaaaga cccaccacca ccaatggaaa ccattcagga gattcttcca gccctttgtg 360
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tggttcctct gctcagccac caggaagtta aagttcagac tgctgcactt agagctgtgg 540
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tcctctccaa catcactgca ggaaatcagc agcaggtaca ggcagtaatt gatgccaatc 720
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aagtagtact cgatggacta agtaatatat taaaaatggc tgaagatgag gcagaaacca 960
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aaaaaaactc gagggggggc ccgtac 3146

<210> 416
<211> 594
<212> DNA
<213> Homo sapiens

<400> 416
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aattgccaga attcccaaac catgtaacac tcattgagaa ttccagatcc attatatcta 180
aagggcaagt gaaggaaaca gtattgtgaa ctgggtataa ctccttggtt cttaactagt 240
acattcttaa tctgtgagac ccaaaggttg ataaacaata atttaagatt gtacagtact 300
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gatggaagat atctgagaca attaaggctt tagcttctag gcaagagaaa taacgttgca 540
ttaaatttca agtttctttc tgctagactt gaatgtgtct agccactcta attt 594

<210> 417
<211> 562
<212> DNA
<213> Homo sapiens

<400> 417
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tacgcgcgct gccctttcga ggccagtgag ctcagcctcc aaggctttaa agccacattt 120
cagcaagaga aagcgctgag agctcgcagg ttcattaaag aaggcaaagc actggtttct 180
ctccttagaa aagtaggttt cttggcttga tgtagactgg cttgctttga tttttagtga 240
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ggatggatgg atggatggat gtatggatga atagatagat ggtgtttgca tgtaaattgc 360
agagaaaaca aaaccaaagc tgattggaaa caattaattg tgggtgtctg agggggaagg 420
tcgcagcttt gggcagcttt gagaagcggt acaagagttc tgtgcctgtg tgtccagccc 480
tggagccagc cagtgcattt attttaagct cttagaagca actccttggc ccaggaatgc 540
gtgacccctg agatgggtcc ac 562

<210> 418
<211> 1412
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1218)
<223> n equals a,t,g, or c

<400> 418
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accctgtgcg cagggctgag atcaagttct cctcctacag aaaggtgccc atcctggtgg 300
cccaggaagg agaaagctcg caacaactaa atgactcctc tgtcatcatc agcgccctca 360
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tggagggtgc cgtggccaag tacatgggtg cagcggccat gtacctcatc agcaagcgac 720
tcaagagcag gcaccgcctc caggacaacg tgcgcgagga cctctatgag gctgctgaca 780
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ctgatttggc ggtgtatggc gtgctgcgtg tgatggaggg gctggatgca ttcgatgacc 900
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cccatccctg ggttcccctg gttcccactc ttcccaagcc tcccgggact gggacatgtt 1380
tgcaataaag gaaaggtttg tggcgccaaa aa 1412

<210> 419
<211> 1939
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1872)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1884)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1889)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1924)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1929)
<223> n equals a,t,g, or c

<400> 419
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gtcggtcgag tgtggcctgt gtggactcgc atcttgcccg aagccgggcg gaggagagct 120
caagctaagg gtgatcagcc catgacctaa acctccagac aaaataaaac ggaaaatttg 180
ctagaatcaa gaatgatgga tccatgttca gttggagtcc agcttcgtac tacaaatgag 240
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gacccattta acatacacaa gaaattagcc aaaaaaaatt tgcatgtaat tgacttagat 480
gatgccactt ttctgagtgc taaatttgga agacagcttg tacctggttg gaagctttgt 540

ccaaaatgca cacagataat caatggaagt gtggatgttg atactgaaga ccgccagaaa 600
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ccaggaaggc aaactgaatt tgctccagaa actggtaaaa gagaaaaaag aaggcttaca 720
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aagaagtcac tgaccatggg aatgttgttc ttgctgctgt gtattcatag gagcttagtg 1740
aaggcaaact taccaacaca aataagcaaa gtggttgcaa taaagacaga tacgtcccag 1800
aggaagtgat ggttaaaaaa aaaaaaactt tacmttaaaa grtatttaat gtgaatatrg 1860
raatattyca cnacmttgaa agcnccagnc ataaagggtg gaagctggcc ccaacttaga 1920
aggngtatng cagttgccg 1939

<210> 420
<211> 576
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (545)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (550)
<223> n equals a,t,g, or c

<400> 420
ggaaggctga ggtgtgcgcc tttttttttt ttccttctta gtcgtgtgta catcattggg 60
aatggaggga aataaatgac tggatggtcg ctgcttttta agtttcaaat tgacattcca 120
gacaagcggt gcctgagccc gtgcctgtct tcagatcttc acagcacagt tcctgggaag 180
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atgggctggt ctggtcggtt tcccatttgt ctggccagtc tctrtgtgtc ttaatccctt 480
gtccttcatt aaaagcaaaa ctaaagaaaa aaaaaaaaaa aaaaaaaaaa aatttggggg 540
ggggncccgn tacccaattg ggcctttagg gggggg 576

<210> 421
<211> 951
<212> DNA
<213> Homo sapiens

<400> 421
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ataatctgta atgttatgaa gacctatcaa aaagttttaa aagtatttct gtcttcaaag 180
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tttttaaact tttagatttg tgaatgacct atgtgtaaat ttttgttttt ataaaccaga 780
aattatacaa gttttaatgt gtgtcaagaa cttgttccat acaactgtgg tatcgagcaa 840
taatgttaat aacttttgga attatataaa ctatgcttaa taatttgtat tgagaattgg 900
taccactata caatactttt ttcctgtatt aaatctttta aataccaaaa a 951

<210> 422
<211> 673
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (76)
<223> n equals a,t,g, or c

<400> 422
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tctccctctc tctttnaccc tccccagggc tccatctccg cctcaggggc ttctccaccc 120
caartctggc tccattcctg gycwtctgtt ggtgacagac ccccccctaa ggtgctcgtt 180
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tcatcatcga cagacatgtc agccgctacc tgctggcctt cctggcagat gacctagggg 480
ggctctgaca gaccctggac ccagggcctc acctgccact caaccaaaga gtcctcgagc 540
cggcccgcca aggggactgc tgcttctttt tctaaatgca tatttttcat tatttataat 600
ttgtgtaaaa aacacacctt caccttacaa ggtgctgacc atattaaatg ttcaggttct 660

ctcaaaaaaa aaa 673

<210> 423
<211> 2073
<212> DNA
<213> Homo sapiens

<400> 423
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cgcccttccc tactggtgcc ccctcctccc cggcmaaggc gcctggacct ggcgaggacg 120
ctgcccgccg agcggactga ttcgcagagt ctgtacatag tgtatattgc tctacccggc 180
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ttctcattta caccaacagg tttcagttcc aacagaaagg tcggggtagg ttcgtgcaga 660
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aatcaagtga attaaattcc tcacaattat tttctttccc tgaggtttga ttggcacagc 780
agcaaaagtt gaggccaccc cacttgtgtc cactgttttt agaaaaaaat gaatggcttc 840
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gactcarggc tggaccgacg tcctagtgga cctgatgtga aattcctgtc aaacaaacac 1920
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aaaaaatact aaaaataaag gttcaagctg ccaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2040
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<210> 424
<211> 2609
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (31)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2585)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2602)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2609)
<223> n equals a,t,g, or c

<400> 424
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gtctgcccag gggggactgcg agttcctggt gcagcgagcc cgggagttgg tgccgcaaga 180
cctgtgggca gccaaggcgt ggctgatcac ggcccgcagc ctctacccgg cagactttaa 240
catccagtat gagatgtaca ccatcgagcg gaatgcagag cggaccgcca ccgccgggag 300
stgctgtacg acatgtttgt gaatttccca gaccagccgg tggtgtggag agaaatcagc 360
attattacat cagcattaag gaacgattca caggacaaac aaacccaatt tttaagaagt 420
ttatttgaaa ctcttcctgg tcgggtccag tgtgaaatgt tactaaaggt cacggaacaa 480
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acggtggtgc agcatggggt tggccttggg swggcactat tagwggctga aactattgaw 600
gaacaagaat ctccagtgaa ctgctttaga aaattatttg tttgtgatgt ccttcctcta 660
ataattaaca accatgatgt tcgattacct gccaatttat tgtataagta cttgaacaaa 720
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aaaacaaaag taccaatctg ttttgtaaat aaaaatcatc ctaaaattyg aaaaaaaaaa 2520
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2580
aaaanaaaaa aagaaaaaga anaagaaan 2609

<210> 425
<211> 987
<212> DNA
<213> Homo sapiens

<400> 425
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gccaggagtt tgaggctgca gtgagctatg attgcacagc tgcactccag cctgttcctg 120
agacctcatc tcttaaaaaa taaaaaataa aaagtctaag aggatacaca gaaattttta 180
agtggttacc tccacggaat gggattaggg gatcagaggt gagggaactc atggtttggc 240
tatttctcgt tctttctgca ctgtttcaaa tttttacaag tgtatgttat tgtactttta 300
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gaaaagtgag gatttaaatg aagtaacccc taaactcagc cagtcccatg tttttttaac 420
acttggaata tctaattcca tttacactgc attcttcaaa tgtaattttc aaagatgcct 480
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aatccctaaa ttctcgccca ggaaagtatc ttggattaaa tggtttttga gaaccttgag 600
agtgtatatt ctatgaaatg gaagaaacaa gaactagaca gagtcacaaa tgctgttgat 660
cacagacaat ctctgccatc cataaggtaa atgtaataca tctggcgacc tgctgagtgt 720
gaacttgcag caggtgagga aggaactctg aactctcaca atcttgtttc ttcatttccc 780
agagagaaac tcggcaaaga gaaaaaggac atttccctcc aggttatctg aaagaatttc 840
aatgcttacc tttaatcatg tgacattgtt tatcttggat taaaagaaaa gaaaatgtat 900
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ccattaatta aaaatatttt aacctga 987

<210> 426
<211> 1726
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (21)
<223> n equals a,t,g, or c

<400> 426
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gctccccgc atgcatgggg atttctcccc agaccagcat acttgtgacc tgagagttca 180
atgygtaaag atgcccctgg tcagccatat ccatcttctc ttgcctggtc cttgattctc 240
tggccgctcc ctgaccttcc tccttccact gccttgactt tcttcctttt tattcctggt 300
gccatctgtc caggcagcta gacaagaact tgttcaccag cagccggatt caggccttcc 360
caggggcata ataagtgacc agcccctcct ctccggacat cagatccaac acataaggac 420
cctggcctac cctccagccc aacagccagt tctgggtcag ctgccaactt aggggtggtt 480
tgattatccc attgaaattc accagtgcct ttgccaaaga ccctctcatt tggacatacc 540
cagattcatt ccctggctcc aactgaaaag actcagtttc aatcgttaaa agttccttta 600
gggccagaag aataaatgaa ttataatccc atttgaaga accgatttat aaccaatgaa 660
aaggttataa tgtaatttat attcttggag gaacaagatt ttcatttggg attatttcct 720
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ccccaacatg caaagcccac atttaaaggc cagcctctgc cccttcagtg atgcgctctt 900
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gttgtggtga aatgggcagt gggggtgggg ggtcttcttt aaacaggccc ccttcccatc 1020
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gagcctgtgg tggagatcta aagatgttta gggaagagct cgactaaaga acaatgaaat 1680
aaatggtcca aggggaagtc aaaaaaaaaa aaaaaaaaaa aaaaaa 1726

<210> 427
<211> 1528
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (22)
<223> n equals a,t,g, or c

<400> 427
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cggggggggaa ggcgcacctg gggtggccct ggcgtgcggg cggcgacatg gaggacggcg 120
tgctcaagga gggcttcctg gtcaagaggg gccacattgt ccacaactgg aaggcgcgat 180
ggttcatcct tcggcagaac acgctggtgt actacaagct tgaggggggt cggagagtga 240
cccctcccaa gggccggatc ctcctggatg gctgcaccat cacctgcccc tgcctggagt 300
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aggcctgttc tcgagaggag cgggatgcct gggcctttga gatcaccggg gctattcatg 420
cagggcagcc ggggaaggtc cagcagctgc acagcctgag aaactccttc aagctgcccc 480

cgcacatcag cctgcatcgc attgtggaca agatgcacga tagcaacacc ggaatccgtt 540
caagccccaa catggagcag ggaagcacct ataaaaagac cttcctcggc tcctcctggt 600
ggactggttc atctccaaca gcttcacggg cagccgtctg gaggcggtga ccctggcctc 660
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aaagtaggtt ccctttgttg gaacaattac actggccatg ccataatgtt gaataaaact 1500
ctcttcttaa aaaaaaaaaa aaaaaaaa 1528

<210> 428
<211> 2055
<212> DNA
<213> Homo sapiens

<400> 428
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ttccactgtg acttattttc tctctcaggc agccagccac ctggtccctt gtgctgactc 180
tagcacagtg gccaggatcc aatacgagtc caggggtgac cgcaggatgg tgggggcagc 240
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tggctggtgt ttgcagtccc acgtggcatg gcctccagcc caacccacag tggagactgg 480
agacagggca atgagtctgg tcgggggcac gtggacatgc cccatagggg ccccacccag 540
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ccttcttaat aaaggctgac agttctgttg gcagccaaga acccacacca tgaagacagg 720
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aaaaaaaaaa aaaat 2055

<210> 429
<211> 355
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (348)
<223> n equals a,t,g, or c

<400> 429
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ggccgctcct cgctaactgc atgcagcctc ccactctgcg catgtttgct tgggcagaaa 120
atgctgagac actgtggccg gacctgacag tcagcacttg gcagtgggct ctgtggaccc 180
agcatttctc atagcgtcaa cccacctctt gccttgttga ggctttttcc tttcagatga 240
gctgtccttg acattctgat gtggtgaaat ggttagcagc atggactttg gaaccagata 300
gacctagata caaaccacag tctaacattg ctwaccctgt gaaccttngg ggcaa 355

<210> 430
<211> 2834
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (18)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2828)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2834)

<223> n equals a,t,g, or c

<400> 430
cngacggtgg ggtgaccnac cgcgtccgcc ggtgcacgtt ggagtcataa gacggcgtcg 60
gtgttgcagt ctgtgtcctt ggaggtgacc agggccactg caggcatggt gctagcagag 120
ctgtacgtct ctgaccgaga gggaagcgat gccacgggag atggaaccaa ggagaaacca 180
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gaagatagtt tacgaagaga aaagaacctg gaagaagcaa agaagattac cattaaaaat 420
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<210> 431
<211> 2709
<212> DNA
<213> Homo sapiens

<220>
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<222> (402)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2677)
<223> n equals a,t,g, or c

<220>
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<222> (2691)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2699)
<223> n equals a,t,g, or c

<400> 431
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<210> 432
<211> 739
<212> DNA
<213> Homo sapiens

<400> 432
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<210> 433
<211> 853
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (734)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (758)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (767)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (833)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (851)
<223> n equals a,t,g, or c

<400> 433
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agaggggaat gtggtgactc accctgcgtg gtggggggag ggcagggcca tgccaggcgc 180
tctggtgccc tgtccatgaa tccttgccgc agccctgcaa rgaaagagct ggagatgcct 240
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<210> 434
<211> 1098
<212> DNA
<213> Homo sapiens

<400> 434
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cattaaacca taagcttcag gacgcgtctg cagaggtgga gcgactgaga agagaaaacc 540
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<210> 435
<211> 1178
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (917)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1176)
<223> n equals a,t,g, or c

<400> 435
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<210> 436
<211> 686
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (364)
<223> n equals a,t,g, or c

<400> 436
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ctctggtttc gccgctagag gtaacatcag ccctcaaaaa tactgtctca acagctggaa 660
atataaaaga tttgcaaact taaaaa 686

<210> 437
<211> 2588
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2481)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2505)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2542)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2544)
<223> n equals a,t,g, or c

<400> 437
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<210> 438
<211> 3609
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (32)
<223> n equals a,t,g, or c

<400> 438
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<210> 439
<211> 2643
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2630)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2633)
<223> n equals a,t,g, or c

<400> 439

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aaa 2643

<210> 440
<211> 637
<212> DNA
<213> Homo sapiens

<220>
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<222> (564)
<223> n equals a,t,g, or c

<400> 440
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ttcttacgga aatgagatct cactgtgttg ctcaggcttg tcttcaactc ctgggctcaa 240
gcaatcctcc tgcctcggcc tcccaagatg ctgggattac aggcgtaagg cactgggcct 300
ggacccataa ataaagtttt attggaagac agtcattctc atttaatgta ttttgttcac 360
atttgcccta cagtggcaga gttgagaagc tgtaacagag accatgtggc ctgcaaggcc 420
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<210> 441
<211> 2595

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (64)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (82)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1222)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2398)
<223> n equals a,t,g, or c

<400> 441
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tggntacctc agytctgagc gnctgatccc tcaagagtga tggaccagca caaacttacc 120
agggaccagt gggaggaccg gatccaggtg tggcatgcgg aacaccgtgg gatgctcaaa 180
gataatgcta tgttggaata cctgaagatt gctcaggacc tggaaatgta tggaatcaac 240
tatttcgaga taaaaaacaa gaaaggaaca gacctttggc ttggagttga tgcccttgga 300
ctgaatattt atgagaaaga tgataagtta accccaaaga ttggctttcc ttggagtgaa 360
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cctgactttg tgttttatgc cccacgtctg agaatcaaca agcggatcct gcagctctgc 480
atgggcaacc atgagttgta tatgcgccgc aggaagcctg acaccatcga ggtgcagcag 540
atgaaggccc aggcccggga ggagaagcat cagaagcagc tggagcggca acagctggaa 600
acagagaaga aaaggagaga aaccgtggag agagagaaag agcagatgat gcgcgagaag 660
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<210> 442
<211> 1301
<212> DNA
<213> Homo sapiens

<400> 442
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acatttgttt acctgttata gttgcaagtt gtacaggctg acattgcctc gatcgacagt 180
gatgctgtcg ttcacccgac aaacactgac ttctacatcg gtggtgaagt aggaaacacg 240
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acagtgaaaa actgcttggc cctggctgat gataagaagc tgaaatccat tgcatttcca 480
tccatcggca gcggcaggaa cggttttcca aagcagacag cagctcagct gattctgaag 540
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ctttttgaca gcgagagtat aggcatctat gtgcaggaaa tggccaagct ggacgccaac 660
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<210> 443
<211> 689
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (678)
<223> n equals a,t,g, or c

<400> 443
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aagttggtgc tttgtgggaa ggagaacagc gggagagccg taagkaacgc agcgtcctga 120
cgtgaggaac gcctcttaac acgccccgtg gcatggagtt tgacagggcc ctggatccct 180
gcgttcaccc ctcctggagt cctggacgcc cacctgggag cagcgtcagg gccgtgccac 240
tttgacccac gttaaacgca ttgcatcctc atttctgtgt cccatctaga tgcttgactc 300
agtgatgcag aacctttcag agttagctgg aagccacagc cctgcctctt gatgcagcct 360
ggatccagcc ggtgtgaaga ggagacccct tccctcttgt ggggtttgga tcctgtgttt 420
ctagcctttg caaaactcta catcagggat atcctggaca tgaaggagtc ccgccagtgc 480
cagtgtattt ttgtacaagg acatccaata aaacaggtag atgtcttggg aactgtcatg 540
gagtgagaga aagagatgct ttctacagtt awggagtgga tgacarcact kgagttataa 600
actgcatctg ctgggaaaaa gttgaatact gagtctgtaa tcagctgctc caagtggcaa 660
gcaagagagc tcagcttnaa cctcacaac 689

<210> 444
<211> 395
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (380)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (384)
<223> n equals a,t,g, or c

<400> 444
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gggggacaag agtgagactt agtctcaaaa aaaaaaaaaa agaaaaaaaa atcagggata 120
tagttcatat cccacttctt tgtttacacc gatgtccctg aatatcagcc tgtagctaat 180
ggacttggga tttctggtct aagtgggcct cctggggatg ggtggtaca ctgagcttct 240
gagcctcatt gtagagtaga aaggtactgg ggcctgtgtg gtaagccttg ttgaaatgct 300
ctggtattca gtattgcctt aataaacttc acccacaact gcaaaaaaaa aaaaaaaaaa 360
aaaaaaaaaa aaaaaaaaan cccngggggg ggccc 395

<210> 445
<211> 1558
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (420)
<223> n equals a,t,g, or c

<400> 445
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gtggcacccc cgacagaggg gcacggatcc cacgtatggg cccaatggct gcttcaaggc 120
cctggatgac atcttaaact taaagctggt tcatatcttg aacatggtca cgggcaccat 180
ccacacctac cctgtgacag aggatgagag tctgcagagc ttgaaggcca gaatccaaca 240
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<210> 446
<211> 3085
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (62)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3077)
<223> n equals a,t,g, or c

<400> 446
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tacaaagctg aatgtcattt ctcgtttgta gctttctgtc actcattcca tcttccttca 180
gacatcacca cgtttctcta aagtcagaaa acattccgtt ttggtctttt tcaaaaaggt 240

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ccacgcagca gtattggggg tggttcgggg gaggggtgtt tcggattttc tttttttytt 420
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caaggaaaca taggcagcac tgaaaaaaaa aaaaaaagct catattaatt agactgacaa 540
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gataacgggt gtgggttggt tttgtttgca aaatggccaa aaaaaaaaac cggcttcccc 660
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<210> 447
<211> 1917

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1915)
<223> n equals a,t,g, or c

<400> 447
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ccgtacagcc cagtccacga agggcgccac gggccgtgac gtcacctatg cccgacggcg 180
cgctttcgtg acgcagcccg ggtctcaggg aacatggcgg cgctggtgag acccgcgagg 240
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aacgagagaa acaaccgctc gaggagtccg catcccgcgc tcccagcacc tgggaagagt 480
ctgggcttcg ctacgataaa gcttatcccg gggacaggag gctgagcagt gtaatgacaa 540
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ccaccagctg gtgggtgttt gtaatcgcca agcaccagct ataggtcaca gccacatcac 1860
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<210> 448
<211> 946
<212> DNA
<213> Homo sapiens

<400> 448
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tctctgctct tctccctttc taataccata aggcagttct tcgtgacttt tacagaaaca 420
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gaccctctcc ctctctggat ggcaccatca ttgaagctgg cgtcatcgga gtctcttgtt 780
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aatggtgcta aactaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 946

<210> 449
<211> 1190
<212> DNA
<213> Homo sapiens

<400> 449
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gttatggttc ttattcatat atttttatag cacctttttt tggaacctat atttgtgctt 180
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ttgtacaatt agtactttat agtcacatgt tgtatatatt aaatagccca gttttattca 480
gacttgtaaa tagaactatt tcaatgtagt taatctaaaa acaaaaaaga aaaccccagt 540
cacgatttgc atgttctctg taagcttcat ccatgctggt tattgcactg aatgatrtat 600
tattagggca tgttaacagt ataccagtaa cagcacttta tctcatttat atgaacacct 660
ttgaggtgct acttaagtcc aagctctgat gtattattca tttgtaaaga taaggtacag 720
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<210> 450
<211> 915
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (915)
<223> n equals a,t,g, or c

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ggggacatta ttgcgcgtgg aacggctgct tttggaagac tattgcccag aagaaaagat 180
gtttggtttt cacaagccaa agatgtaccg aagtatagag ggctgctgta tttgcagagc 240
taagtcctcc agttctcgat tcactgacag taaacgctat gaaaaggact tccagagctg 300
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aagatggaag aagttgccag caggatcaaa aaaaaactgg aatcatgtgg tagatgcaag 420
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caggataaaa agcaaccaga tcagtaaact gcagaaggaa tttaaacgtc ataattctga 540
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aaagstacaa aatgn 915

<210> 451
<211> 1862
<212> DNA
<213> Homo sapiens

<400> 451
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cggcacgagt gggctcccac ctaccctcat gacctccttt tgtgaaatgc tgaagggctc 180
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aa 1862

<210> 452
<211> 800
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (303)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (756)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (794)
<223> n equals a,t,g, or c

<400> 452
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caggcgtgaa ttacccttca ctaagtcggc tcatctcacc aatccttgga atgaacataa 120
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<210> 453
<211> 2106
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (2093)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2094)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2096)
<223> n equals a,t,g, or c

<400> 453
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ccgctgtgtc cgggtgggtg gtcagaatgc cgtgctccag gtgttcacag ctgcttcgtg 120
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aaaaaa 2106

<210> 454
<211> 2288

<212> DNA
<213> Homo sapiens

<400> 454
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aattcctttt aaattttctt agagaaattt ctctgtggct cagttttacc acccataaag 2040
cggagacagt aatttatggt atcctttctg acccacaaag tatgaaaagt tctgtaatct 2100
gtaaactcag ttctgtaatc tgtattattg agatgattaa tataaagttg tattttcact 2160
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2280
aaaaaaaa 2288

<210> 455
<211> 2361
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature

<222> (2256)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2260)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (2288)
<223> n equals a,t,g, or c

<400> 455
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gtgctcagaa tccttggatt ctgctttaaa tgttctggcg cgagcattgg aaaataacaa 180
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cgaggtgcag gaaatgtgtg aaacagctgt tgaatatgct ccagattatc aaagcttttg 300
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agaggctctt ttgtttagag ttcagctgca catatttact ggaagatgcc aaagtgcact 480
ggcaatttta cagaatgcat tgaaatctgc taatgatgga atagtagctg aataccttaa 540
aaccagtgat cgatgtttgg catggttggc ctacatacat cttattgaat tcaacattct 600
cccttcaaaa ttttatgatc catctaatga taatccttca agaattgtta acactgaatc 660
atttgtaatg ccatggcaag ctgttcaaga tgtaaagact aatcctgaca tgttgttagc 720
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gctggaagcc cttgttgcat tatatttgca aacaaatcag catgacaaag ccagagcagt 960
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tacagtccct gcccgatacc ccattccttt tagcagtgct gattactggt ccaactatga 1500
atttcataat agggttattt tcttttattt gagctgtgtt ccaaagaccc agcattccaa 1560
aaccttggaa cggttttgtt cagttatgcc agctaattct ggacttgcat tgaggttact 1620
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caaagtgact gacatttatt ttaattttgc tttgtntttn tttawtttct cccccattcc 2280
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gggatttaat atccagggct g 2361

<210> 456
<211> 957
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (32)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (41)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (47)
<223> n equals a,t,g, or c

<220>
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<222> (49)
<223> n equals a,t,g, or c

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<222> (50)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (61)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (64)
<223> n equals a,t,g, or c

<220>
<221> misc feature

<222> (67)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (70)
<223> n equals a,t,g, or c

<220>
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<222> (73)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (75)
<223> n equals a,t,g, or c

<400> 456
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gctgcgtgta ctgctgggcg gcttcttcgc gctcgtgggg ttggccaagc tctcggagga 180
gatctcggct ccagtttcgg agcggatgaa tgccctgttc gtgcagtttg ctgaggtgtt 240
cccgctgaag gtatttggct accagccaga tcccctgaaa ctaccaaata gctgtgggct 300
ttctggaact gctggctggg ttgctgctgg tcatgggccc accgatgctg caagagatca 360
gtaacttgtt cttgattctg ctcatgatgg gggctatctt caccttggca gctctgaaag 420
agtcactaag cacctgtatc ccagccattg tctgcctggg gttcctgctg ctgctgaatg 480
tcggccagct cttagcccag actaagaagg tggtcagacc cactaggaag aagactctaa 540
gtacattcaa ggaatcctgg aagtagagca tctctgtctc tttatgccat gcagctgtca 600
cagcaggaac atggtagaac acagagtcta tcatcttgtt accagtataa tatccagggt 660
caaccagtgt tgaaagagac attttgtcta cctggcactg cttcctcttt ttagctttac 720
tactcttttg tgaggagtac atgttatgca tattaacatt cctcatgtca tatgaaaata 780
caaaataagc agaaaagaaa tttaaatcaa ccaaaattct gatgccccaa ataaccactt 840
ttaatgcctt ggtgtaagta tacctctgaa ctttttctg tgcctttaaa cagatatata 900
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<210> 457
<211> 923
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (886)
<223> n equals a,t,g, or c

<400> 457
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gggatggtca cacgcgcggg ggccggaact gccgtcgccg gcgcggtcgt tgtcgcattg 120
ctctcggccg cactcgcgct gtacgggccg ccactggacg cagttttaga aagagcgttt 180
tcgctacgta aagcacattc gataaaggat atggaaaata ctttgcagct ggtgagaaat 240

atcatacctc ctctgtcttc cacaaagcac aaagggcaag atggaagaat aggcgtagtt 300
ggaggctgtc aggagtacac tggagcccca tattttgcag aatctcagct ctcaaagtgg 360
gcgcagactt gtcccacgtg ttctgtgcca gtgcggccgc acctgtgatt aaggcctaca 420
gcccggagct gatcgtccac ccagttcttg acagccccaa tgctgttcat gaggtggaga 480
agtggctgcc ccggctgcat gctcttgtcg taggacctgg cttgggtaga gatgatgcgc 540
ttctcagaaa tgtccagggc attttggaag tgtcaaaggc cagggacatc cctgttgtca 600
tcgacgcgga tggcctgtgg tkggtcgctc agcagccggc cctcatccat ggctaccgga 660
aggctgtgct cactcccaac cacgtggagt tcagcagact gtatgacgct gtgctcagag 720
gccctatgga cagcgatgac agccatggat ctgtgctaag actcagccaa gccctgggca 780
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cctgggcgtc ctggtacact ggg 923

<210> 458
<211> 3058
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (14)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (15)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (24)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (27)
<223> n equals a,t,g, or c

<220>
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<222> (418)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3045)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3053)

<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3056)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (3057)
<223> n equals a,t,g, or c

<400> 458
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taaatacact taatttcaca atacattgtt atatgtaccc cagttgttgt tagtggggac 180
tatgatactg taataatatt tttaaaaatt tacatcaaga gaggcagtca ttcacgatgg 240
ttttgtgcca gctcttttta gggttttgga tcacattaga gatatttaga acatattacc 300
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ttaaaaaaat ctgtgcaata attttaaaat gtgctcccag gaatagacac aaatgttttg 480
cagtatcttt taagctgcat tttcctttag tgatgcattt gtcaattgca ctgaatttaa 540
atctgaaagt cagaggtgat tattgatagt acttttgtat tttgatatgg acagtttatt 600
catttgcata cagttattga ctttttccca gctgattaaa agatagtcaa gaaattctgc 660
aatatagctg ccaaaataga cagctacatt tttatgatat tgtcatcttt tctgtttytt 720
ttttcttttt tttctttagc tattttactt aagcataata gccacaatag gacatataaa 780
agattataaa tacagagctt tattatcctg acgtcttggg tcttttaagt atatactttt 840
ctgaaaggta tccattttgt aggcttgggt tcttcatgag catacgattg tttatttttg 900
ctgctgttct caacatcatc attgcctgct gatgtgccac gatgctgctc caatagacag 960
caataagatt gtctctaatt tgagcagtaa catgattgca agagaccaag tttcacagct 1020
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agtggaccaa cattgtggca tggcagcaaa tgccaacatt ttgtggaata gcagcaaatc 2040
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aaaaaaaaaa aaactcgagg gggggcccgt acccaatcgc ctgtnatgta tcntannc 3058

<210> 459
<211> 555
<212> DNA
<213> Homo sapiens

<400> 459
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rgggargtta accmaactyc caaaggttta ataccycaaa cmccttcccc ttgagtgtga 120
cycacattgt taggtgctga cctagacaga ratgaactga ggtccttgtt ttgttttgtt 180
catatacaaa ggtgctaatt aatagtattt cagatacttg aagaatgttg atggtgctag 240
aagaatttga gaagaaatac tcctgtattg agttgtatcg tgtggtgtat tttttaaaaa 300
atttgattta gcattcatat tttccatctt attcccaatt aaaagtatgc agattatttg 360
cccaaagttg tcctcttctt cagattcagc atttgttctt tgccagtctc attttcatct 420
tcttccatgg ttccacagaa gctttgtttc ttgggcaagc agaaaaatta aattgtacct 480
attttgtata tgtgagatgt ttaaataaat tgtgaaaaaa atgaaataaa gcatgtttgg 540
ttttccaaaa aaaaa 555

<210> 460
<211> 612
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (595)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (599)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (600)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (606)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (612)
<223> n equals a,t,g, or c

<400> 460
ggccactcag agtgggtgtc ttgtgtccgc ttctcgccca acagcagcaa ccctatcatc 60
gtctcctgtg gctgggacaa gctggtcaag gtatggaacc tggctaactg caagctgaag 120
accaaccaca ttggccacac aggctatctg aacacggtga ctgtctctcc agatggatcc 180
ctctgtgctt ctggaggcaa ggatggccag gccatgttat gggatctcaa cgaaggcaaa 240
cacctttaca cgctagatgg tggggacatc atcaacgccc tgtgcttcag ccctaaccgc 300
tactggctgt gtgctgccac aggccccagc atcaagatct gggatttaga gggaaagatc 360
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tgcacctccc tggcctggtc tgctgatggc cagactctgt ttgctggcta cacggacaac 480
ctggtgcgat ktggcagtga ccattggaca cgctagaagt tatggcagac ttacaaataa 540
aaaaaaactg gctttttgaa aaaaaaaaaa aaaggcggcc gtttaaagac caacntacnn 600
ccctgnttca an 612

<210> 461
<211> 882
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (852)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (877)
<223> n equals a,t,g, or c

<400> 461
tttccttctc cctttcttgg ccctcctctg ctcctcccca caccctgcag gcaaaacaag 60
gaagagatca tcaattatga aatttgaaca ccaagggacc tggtgtgcct gggcctgagc 120
agcatcgttg gcgtctggta cctgctgagg aagcactgga ttgccaacaa cctttttggc 180
ctggccttct cccttaatgg agtagagctc ctgcacctca acaatgtcag cactggctgc 240
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gagaaaggcc tcgaagcaaa caactttgcc atgctgggac ttggagatgt cgtcattcca 420
gggatcttca ttgccttgct gctgcgcttt gacatcagct tgaagaagaa tacccacacc 480
tacttctaca ccagctttgc agcctacatc ttcggcctgg gccttaccat cttcatcatg 540
cacatcttca agcatgctca gttatgagga gtcaaatcct aaggatccag cggcagtgac 600
agaatccaaa gagggaacag aggcatcagc atcgaagggg ctggagaaga aagagaaatg 660
atgcagctgg tgcccgagcc tctcagggcc agaccagaca gatgggggct gggcccacac 720

aggcgtgcac cggtagaggc acaggaggcc aaggcakctc caggacargg cagggggcag 780
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ctctgctcct cnccacaccc tgcaggcaaa agaaaanccc ca 882

<210> 462
<211> 733
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (640)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (660)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (677)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (687)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (711)
<223> n equals a,t,g, or c

<400> 462
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gggatagctg cttaactatg cacctttaca gaacattctt agcagtaatg ctcaaattta 120
aaaggcacac tcaagatact tccatgtcat ggatccttcc ccaggtccca gtartataaa 180
tatagggaag aggttagcat gaacttacwa attgttttaa gtaatcctct tgaatgccag 240
tcattaaagg actttgccct tctacatcaa attacatcct tttcacaaat ccccatttct 300
gtaataactg gtgcaaacct aaaggtgctt tatagtttta ctactttgca gatttgcaat 360
gctgcatata atgcagaaga gcattaaaaa cttttgtaaa aactcatgat tttgataaac 420
ttttaaagta gcgtttatat gtaaatagaa ctacacatgg gcacacacac ttgcacargg 480
gcttcagaaa aacgtgcaat ataggtgagg aaaaatgtct attgaaactt tctcacaggc 540
tgcccttatt aattaaaact agtgttgggg gcaagcaaca tctgtttcca agtaggttca 600
ggggactagg caaaccttaa agggcggcag gcggcctgcn gtttgcttca ttccttaggn 660
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tttgtggctt ttt 733

<210> 463
<211> 574

<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (1)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (18)
<223> n equals a,t,g, or c

<400> 463
ntctcaatta aacaaaanaa aaaagtggag aactggcagt gacctctact gggggccatg 60
gcagggaggg gagccttctg gaagggctgc cttggagatt ggaatgggga ctcccaggga 120
gacctgcgtt ccatccctgc ctgcctcacc cctgccacag actctgcaca ccactggatg 180
gtgggtccaa gcctggcaca gtccctgtgc ttgtcagagt cattattatg attaatatca 240
attacgatgc caaaaattgc tgggcaaact ttgaagacct caacttgtta caatgacgat 300
gatgatgatt cttggcggtt acacaatcct tcctcctggg ggggaggcag ctaggaggcc 360
cagcaggggg gcttctatgc tgctgggctc ccctagggag ttggggtagt ctgtgccaac 420
tccaggcagc tgctgtggcc tcacccctgg gccccccaat tttgggtcat ccatcctcaa 480
atacactatt tttgcttgta tgcctgtgtc atttgttggt tgtacagagg ggatataggg 540
agagtggtag gcttcccaca cagaaactag gaca 574

<210> 464
<211> 691
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (7)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (9)
<223> n equals a,t,g, or c

<400> 464
gtacngnant cccgggtcga cccacgcgtc cgcggaaggt ccttctgaat cccttccctg 60
ttccttaggt tgcactagtc gggggttcca tgctgggggg cagaaggaat gctctctacc 120
gtctgaaacc gttcatcagg aaggccttga tttgtgatgt gctaggagag cacaggatct 180
gcaaatagaa ggcacctgtc tcccttctgc aggccgagga gaggccgcca tggactgtgt 240
gcttcttcat ggcttgttta ctcttctttc acagacccta cagcttgggg cctgggctcc 300

tctgaccatc ctcattgaga aaggaaagtg agtccagaga agttgatgct tcctacctgt 360
tggagcggcc cagcagtgta agcgtggttg ttactgcccc atccgccatg tccttcagtg 420
ccaccattct cttctcccct cccagtggca gcgaggccag atgctgctgc tgcgcctgta 480
agagtgagac taatggaggc aacacaggct cccagggtgg gaatcctcct cccagcaccc 540
ccatcacagt gactggacat ggcttggctg ttcagagctc agagcagctc ctgcatgtta 600
tctaccagcg ggtcgataag gcagtgggtt tggctgaagc tgctctgggt cttgccaggg 660
ccaacaatga gttgttaaaa cgtcttcagg g 691

<210> 465
<211> 260
<212> DNA
<213> Homo sapiens

<400> 465
atgagtcaca tttattgatt tgcatwtgtt gaatcaacct tgcatcctgg ggacaaagcc 60
aactccattg ttgcrgatga actttttaat rtgctgctgg atttggcttg ccagtatttt 120
attgaggatt tttgcacagt gtttaccaaa gacattggca tgatgtgttg ttgttgttgt 180
tgttgttgta gtatctatga taggttttgg tatctggatg atgctggcct gataggaatg 240
agttagagag aacttcctta 260

<210> 466
<211> 851
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (584)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (727)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (755)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (761)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (793)
<223> n equals a,t,g, or c

<220>

<221> misc feature
<222> (825)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (842)
<223> n equals a,t,g, or c

<400> 466
gcgttcgcgt gggtcccgcc cccacactcc gcccagaggg gcctcagctt ttccaccact 60
gctttctagt cctttaactc ctagaggcaa acttttgggg gataagaaag cctgggaggg 120
gcctgtgcca aaaccctctc tgcctgggga ctgggcggtg attccgcttc tgcctgggct 180
cctgccatgg cccccgagag gggctgacac tttagctccc ggtgcaggtg agaacccgcc 240
cggaggaaga aggaaggcgc gggccgggga ttaggagacg gaggcggact cggagccagg 300
gaaccagggg tccgggctag agctggagtc gtgagcgcgc gcccgccccg ctctgggagg 360
accgcgagat gcccgtgctg aagcagctgg gccccgcgca gcccaagaag cggcctgatc 420
gcggcgccct gtccatctcc gcgccgctcg gcgacttccg gcacacgctg cacgtggggc 480
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cgagccccgg gcgcccccg cgggggcccc gckctccccg ccgncgccgc cgtccgcagt 600
ccgcagcgcc tcgcctgcga cccgctgtgc cttcacctgg atctggggcc tcatgctgga 660
cgcggtgctg gcgtatggac gcggcgcgcc gaagcggctg cgcaagccac gcgaacccgc 720
ccggacnagc cccagccgtg cgccacgcga ctcantacac natggcttag tctatccggc 780
tccgccgacc atntgtctaa cgcagggggc gaaaaaaaaa aactngggcc gaccatcgct 840
tnggcatcat t 851

<210> 467
<211> 503
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (498)
<223> n equals a,t,g, or c

<400> 467
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ttgagtgcca gctacagacc cataacagca agatggtgac cttccgattt gatctggatg 120
gggacagccc ggaagagatt gcagctgcca tggtatataa cgagttcatt ctgccttcgg 180
agcgagatgg atttctcaga cggattcggg agattatcca gcgagtggag accctgttga 240
agagagacac tggccccatg gaggctgctg aagacaccct aagcccccag gaggagccag 300
caccattacc tgccctgccc gtccccctcc cagacccatc caatgaagag ctccagagca 360
gcacctccct ggagcacagg agctggacag ccttctccac ctccttcatt ctttcttcct 420
gggaactcct ttgtctcctg ggaaacccat tttcccctgg aacccccatt ttccccaggg 480
tcccatkttt ccccatcnat ttt 503

<210> 468
<211> 1905
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (933)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (940)
<223> n equals a,t,g, or c

<400> 468
ggcacaggac cagtggagtg agctgttcat ggatgcgcta gggcccttca acttcgtgct 60
ggtgagttcg gtgaggatgc agggtgtcat cctgctgctg ttcgccaagt actaccacct 120
gcccttcctg cgagacgtgc agaccgactg cacgcgcact ggcctgggcg gctactgggg 180
taacaagggt ggcgtgagcg tgcgcctggc ggccttcggg cacatgctct gcttcctgaa 240
ctgccacttg cctgcgcata tggacaaggc ggagcagcgc aaagacaact tccagaccat 300
cctcagcctc cagcagttcc aagggccggg cgcacagggc atcctggatc atgacctcgt 360
gttctggttc ggggacctga acttccgcat tgagagctat gacctgcact ttgtcaagtt 420
tgccatcgac agtgaccagc tccatcagct ctgggagaag gaccagctca acatggccaa 480
gaacacctgg cccattctga agggctttca ggaggggccc ctcaacttcg ctcccacctt 540
caagtttgat gtgggtacca acaaatacga taccagtgcc aagaaacgga agccagcttg 600
gacagaccgt atcctatgga aggtcaaggc tccaggtggg ggtcccagcc cctcaggacg 660
gaagagccac cgactccagg tgacgcagca cagctaccgc agccacatgg aatacacagt 720
cagcgaccac aagcctgtgg ytgcccagtt cctcctgcag tttgcctttc agggacgaca 780
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cagtcctggc acctcaactg tgacaatcag caaagcccca cccaggcccc catctgggat 1800
gatgggagag ctctggcaga tgtcccaatc ctggaggtca tccattagga attaaattct 1860
ccagcctcaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaa 1905

<210> 469
<211> 775
<212> DNA
<213> Homo sapiens

<400> 469

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agcaaatagt tggcataaag ggaaggatta tgtcagcaaa accttttttaa aaatccttat 120
ttgattaatg atggtaaaaa ctaaaaaaaa acagagtttt ctattaaaat agcctatggc 180
cttggctaag acagctatcc tagtaagatt atcttatttt ctatttatag acacatccac 240
tyaaactgca tttttatcca gcgttgatct tcacactcac tgttcctatc aactcatgtt 300
gccagaggcc attgccattg tttgctcacc aaagcataaa gacactggca tcttcaggct 360
caccaatgct ggcatgcttg aggtttctgc ttgtaaaaaa aagggctttc atccacacac 420
caaggagccc aggctgttca gtatatgcaa acatgtgttg gtaaaagaca taaaaataat 480
tgtgttggat ctgaggtgat atgttctgaa tgtaagcacc gtcaacatca gacacctact 540
catggacatg tggttgccgg atttcttaa gatgtttcca gaaatgactg atattttata 600
tttatacatt ttagatgaca aagcttgata tttattgctg ttgcacattt taaagttttc 660
tttttgggtt gctctgtgtc aagagaggtt acatggtgtt aaatcggtac ctgataatgt 720
acccaaatac tatggccaga taataaattg tgctgcaaam aaaaaaaaaa aaaaa 775

<210> 470
<211> 1297
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (5)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (31)
<223> n equals a,t,g, or c

<400> 470
tccgnaattc ccgggtcgac ccacgngtcc naatcaagct ctaagtcttt ggaccctctg 60
tggaaacatt tctaacccga attttaattt ggccttttca accaaaggct tagagtggta 120
gcaagggatt tcttccaata ggaaacctga tgtttctgat ttaaagagaa ggtgatattt 180
taattgtttg aattaagctc cttgcaaagt tcgggtgtgt ttacccactt agggctttct 240
ttcccagtca acgctaacac attttgttaa atgatccctt tccctgctca cattgtgtgt 300
catttctcat catcagtagt cctccagcct gggcagctgt ccccaccctt tttcatgtag 360
gtgcaggaag ttaaatctca tttccaggat gcatgtgaac atttacaaag ttgaactttg 420
agtgcattct gctcatatga attattggga ttgttgatat atattgtatt atgctaccaa 480
agaaatattg gttttattag aaggaaatgg tcatcctctg gaccatggag actagctcag 540
aatacgctga tttccctctc ctgactttgc caagcctttg gctgcttttg cctgataaag 600
ggcagggcca tctgaagaca cttcccccag tcggctttgg agtcacggga gctagtgcct 660
gctcacacat ttttcaaaag ggcagtgcac tcagaacttc actgtacctg ggatttttaa 720
ttcctcttgc agtgttgacc agcagagaga cttgaggcta ctttaagcct ccactatgtg 780
tttgtagata aaattctcca ttcaaacatt ttaaaggact ttgaacatta tctgcttatg 840
gaagttgtgc ccttcacttg gttagtaacc acctcagcca taatacttac catcataggt 900
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gtataagaat atcagatcca gttagcaaaa gcctaggact tgtttctcca aacattgtac 1020
taacattcaa cttgttttaa aattatgact caagaatttt aaaaaattat tctggacatg 1080
aattaaaact tttttataat ataagtattt ttctgattga aaaaaggata taattgactt 1140
cactctaatt gtcatgtata tttccataag taaatggatt ttgaagtatt tttatttttt 1200
gaactttatt taaagcattt gtgatgacat gttcaacttt tgcatgtatg tagcctttga 1260
agtaaaaata aataggaatg ttaggctcac gttaaaa 1297

<210> 471
<211> 2155
<212> DNA
<213> Homo sapiens

<400> 471
aatatagtaa tttttaaatt tgttaataat gaaaaccctt aagcatgcag gatgaggtat 60
ttgggttttt tttttagatc gatcacatct acagaaaatg gctaaaccaa gttaactttt 120
attatagaca gtgaataaaa caccaaaaac ccaaaaatgc tttaaccaca gtataaataa 180
tagattatac acatcatctt aataactatt tttaagttat ttaccatagc ctctgtatag 240
accttaggaa cagtgtttca gtgatctggc accagtttat tttgttctgc tgaaattctg 300
tatcacaaat gtgctacctg gtttttgtcc attagataat tactctttat aaggaaagga 360
aagagaagca gagttagttc cagctctaat agggatcttc aaagttattt tgtcttgatg 420
tatgtaacag taattcttta catcttttga tttttctctt ccttttttatt cactcttccc 480
acgaatttaa atgtttaagt tatattcatc actagcaagg atgrtaaaca cttgtgcact 540
gaaagctaac agggagaggg tacacaatat tttacagktt cttaaacata atttartgca 600
tcaccttcca cttgctaaca taccaagtca gttattttca agggaagaac cttttaaatt 660
atggtcctcc atttactact tccactgaga gtatgctctc attcctcagg tgttttgaga 720
aacatgacta ataaccacac aattaagtag agtcattcca agtcctatgg cctggaaatt 780
gtattcccta taatatacaa attttcctgt aataaagtca acttagaaac tccaaggagg 840
ttacatgttt tccaacatat cctaaaaact gtgatataag ctaacatata atttgcctta 900
cgtcaaaaga atatgttttg ttgcagctga ttccagttta taatagatcc ctagtaaaaa 960
gctttgattc aacacaattg ttcatcttca catcccaaac agaatcactg tttcttgaat 1020
atatattttt gaagtttttt tgtgcaatat attactaaat cagttattat tttacttttc 1080
caaattcaga gaaagaaaac agattacctg aattcatgga aaaggtggat cacctccctt 1140
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ctttgtatat agtaaagttt agtatatata tattttttttc tttttgctac tttctgaggc 1260
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agagaatgtg ttaaggaggg aatgtatatg tcttggtaga ccaggaggcc tttgccagca 1380
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aacaacttaa caccctttttg tgaagatcac agcatttatc taagaaactg tgaggctttc 1500
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ttctttgcat ctaactgcca gtgccattgt caaaacttat tttttaaatc gttgtacatt 1740
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atgtataatt gccaattgat tgtaactatt atttattttt aaatgaaagt gtaagaatgc 1860
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taatctctga ttattaaaat gtttataaag tttattttta ccaaagagat gcaattcatt 2100
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<210> 472

<211> 459
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (368)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (416)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (437)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (447)
<223> n equals a,t,g, or c

<400> 472
gcggagatgc agctcaaggg gaagaaaggt ggtgcgggcc tgcgggcggg acagaggggg 60
ccggtaactt gtggaggggc ggcctgacaa aggccgggcg cggagggacc gtgcgaggag 120
cagtgattga wctgccgtcc aatcccagct ctgccgctga ctagttttga aacctgtaga 180
aaggctccgt gtctgcttta attaccggtc cccccaggat tgtttcaaga attcagtagc 240
tgaggctggg agtggtggct ttgtaatccc agcgctttgg gaggcctggg cgggaggatc 300
gcttgagccc gagaccggcc tgggtgacat ggtgagatct cgtctctaga ggaatgcaaa 360
ggttggcncg ggcgtggtgg cgcacgcctg tggtcccggc tgcttgggcg gctggngtgg 420
gaggattgct tgacccngga ggtcaanggc tgcactgca 459

<210> 473
<211> 710
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (65)
<223> n equals a,t,g, or c

<400> 473
cctcgtcata ttctaagata tccctaagaa attcttcaaa agtaacggaa tcagcatctg 60
tgatncaatc ccaggatgtg agtgggtctg aagatacatt cccaaataaa cgacctaggc 120
tagaagataa gactgttttt gacaattttt ttatcaagaa agagcaaata aaaagcagtg 180
gtaatgatcc aaagtatagt acaaccacag ctcagaattc cagcagttca tccagtcaga 240
gcaaaatggt taattgccca gtttgtcaga atgaagttct ggagtctcag attaatgagc 300
acttggactg gtgccttgaa ggtgacagca tcaaagtcma aagcgargaa agtctttgaa 360

aaaggtttca aagtctcaag taccacctgt attatctcac taatgtgcta tgtcagccag 420
tcaggaagtt ctggttaata ctaagatttg taggttataa tctagttcac ataaccaata 480
gaaagtgtcc tattttatat atacgcatat aagattgtaa ttttaagatg ttttgtgtct 540
cagggtgcta cattcactct tgccttaggt atactgtaac ccaggttctg cctgtcgtgt 600
ataattttta gatactttkg ttctttcttg ctcttaagga ttttaaaaac ctgktaatct 660
ttttatttgt atactttcct aaaaatattc atatggggaa tcctgtcaaa 710

<210> 474
<211> 1279
<212> DNA
<213> Homo sapiens

<400> 474
gcccacgcgt ccgccgcaag ccaacagggg tgtcgtgcgg tgggagtact tccgcctgcg 60
tcctctgcgg ttcagggccc ctgcactgag gctgcagaag tcccagtcat ctgatctgct 120
ggaaagggag agggagagtg tcctgcgccg ggagcaagag gtkscagagg agcggagaaa 180
tgctctcttc ccagaggtct tctccccaac gccagatgag aactctgacc agaactccag 240
gagctcctcc caggcatccg gcatcacggg cagttactcg gtgtctgagt ctcccttctt 300
cagccccatc cacctacact caaacgtggc gtggacagtg gaagatycag tggacagtgc 360
tcctcccggg cagagaaaga aggagcaatg gtacgctggc atcaacccct cggacggtat 420
caactcagag gtcctggaag ccatacgggt gacccgtcac aagaacgcca tggcagagcg 480
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ctgagggagg aggccaaact cccagtgctg gggtccctg tgcagccctc aaacccttca 1080
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aaaaaaaaaa aaaaaaaaa 1279

<210> 475
<211> 480
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (354)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (371)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (470)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (475)
<223> n equals a,t,g, or c

<400> 475
tgactcgcag tggagtcagt caacaaccca ggtctcctgg ctcttaagac gtttcctttt 60
taatattata ggaatgggaa tgctggctcc ttttacagta ctggtccctt tacactgtac 120
tgcatactcg ttttttcagt ggatatatga gcttcttgtc aaaattatgt gggtcccatg 180
aagaaacatc taaccagggg aagggggaag gattgagaca taagacgtac ttatataaga 240
tttcttttaa gaattccaat cttggacatg ttaaattttt ttatattttc tcatgtttaa 300
atctcagttc gtttttcatg ctgtgctcag cacgtaagtg tggggaaatg gacnaagggg 360
gctgcgggaa ngaccgctgg ctgggctcaa catgcctgtg ccttttcccc ttcatgtgtt 420
cttgtgtctg atgcatctct aacacagaat gacattttac tgtttttcan aaaanaacct 480

<210> 476
<211> 947
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (3)
<223> n equals a,t,g, or c

<400> 476
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tcggggaaat ccaccgtggg cgccctgctg gcatctgagc tgggatggaa attctatgat 120
gctgatgatt atcacccgga ggaaaatcga aggaagatgg gaaaaggcat accgctcaat 180
gaccaggacc ggattccatg gctctgtaac ttgcatgaca ttttactaag agatgtagcc 240
tcgggacagc gtgtggttct agcctgttca gccctgaaga aaacgtacag agacatatta 300
acacaaggaa aagatggtgt agctctgaag tgtgaggagt cgggaaagga agcaaagcag 360
gctgagatgc agctcctggt ggtccatctg agcgggtcgt ttgaggtcat ctctggacgc 420
ttactcaaaa gagagggaca ttttatgccc cctgaattat tgcagtccca gtttgagact 480
ctggagcccc cagcagctcc agaaaacttt atccaaataa gtgtggacaa aaatgtttca 540
gagataattg ctacaattat ggaaacccta aaaatgaaat gacaatgatt ttgtatcagt 600
ggtccaaaca gaactaagca taaatcattg tgccatccca aacctcgttc cagccgcctt 660
gcccatacta gattctaaat gtttctaaag gcaaacccca atgtgtcaag acagacttgt 720
ttaggtgtaa ttttaggaat tatgctggtt catcaggaag cagaggggga gttttaaaag 780
tcaagcttaa attgaagttt aaattcatct ataaccaaat caaatgatca gaggaaattc 840
tgtaatcaat gctggaaatc gttacattgt ttagaacatt cttgctcatg cctgtatttg 900
cacaaataaa tgaaacttcg ctgtcaaaaa aaaaaaaaaa aaaaaaa 947

<210> 477
<211> 585
<212> DNA

<213> Homo sapiens

<220>
<221> misc feature
<222> (547)
<223> n equals a,t,g, or c

<400> 477
accaggacca cggggcctgg ctgcgcggcg gggatgtgtg gctggacagc tgccggtttg 60
ctgacaatgg cattggcctg accctggcca gtggtggaac cttcccgtat gacgacggct 120
ccaagcaaga gataaagaac agcttgtttg ttggcgagag tggcaacgtg gggacggaaa 180
tgatggacaa taggatctgg ggccctggcg gcttggacca tagcggaagg accctcccta 240
taggccagaa ttttccaatt agaggaattc agttatatga tggccccatc aacatccaaa 300
actgcacttt ccgaaagttt gtggccctgg agggccggca caccagcgcc ctggccttcc 360
gcctgaataa tgcctggcag agctgccccc ataacaacgt gaccggcatt gcctttgagg 420
acgttccgat tacttccaga gtgttcttcg gagarcctgg gccctggttc aaccagctgg 480
acatggatgg ggataagaca tctgtgttcc atgacgtcga cggctccgtg tccgagtacc 540
ctggctncta cctacgaaga atgacaactg gctggtccgg caccc 585

<210> 478
<211> 3470
<212> DNA
<213> Homo sapiens

<400> 478
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gggcaacatg gcgggtgtgg aggaggtagc ggcctccggg agccacctga atggcgacct 120
ggatccagac gacagggaag aaggagctgc ctctacggct gaggaagcag ccaagaaaaa 180
aagacgaaag aagaagaaga gcaaagggcc ttctgcagca ggggaacagg aacctgataa 240
agaatcagga gcctcagtgg atgaagtagc aagacagttg gaaagatcag cattggaaga 300
taaagaaaga gatgaagatg atgaagatgg agatggcgat ggagatggag caactggaaa 360
gaagaagaaa aagaagaaga agaagagagg accaaaagtt caaacagacc ctccctcagt 420
tccaatatgt gacctgtatc ctaatggtgt atttcccaaa ggacaagaat gcgaataccc 480
acccacacaa gatgggcgaa cagctgcttg gagaactaca agtgaagaaa agaaagcatt 540
agatcaggca agtgaagaga tttggaatga ttttcgagaa gctgcagaag cacatcgaca 600
agttagaaaa tacgtaatga gctggatcaa gcctgggatg acaatgatag aaatctgtga 660
aaagttggaa gactgttcac gcaagttaat aaaagagaat ggattaaatg caggcctggc 720
atttcctact ggatgttctc tcaataattg tgctgcccat tatactccca atgccggtga 780
cacaacagta ttacagtatg atgacatctg taaaatagac tttggaacac atataagtgg 840
taggattatt gactgtgctt ttactgtcac ttttaatccc aaatatgata cgttattaaa 900
agctgtaaaa gatgctacta acactggaat aaagtgtgct ggaattgatg ttcgtctgtg 960
tgatgttggt gaggccatcc aagaagttat ggagtcctat gaagttgaaa tagatgggaa 1020
gacatatcaa gtgaaaccaa tccgtaatct aaatggacat tcaattgggc aatatagaat 1080
acatgctgga aaaacagtgc cgattgtgaa aggaggggag gcaacaagaa tggaggaagg 1140
agaagtatat gcaattgaaa cctttggtag tacaggaaaa ggtgttgttc atgatgatat 1200
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gttctgcacc tataccctct ggtgttgctt tttaaccttc ctggaatcca ttttctaaaa 1920
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gatgtacctt attggcaaca agttattagt ttgatgttta acaatagtgc ctttagtaaa 3420
ttattttaca actaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 3470

<210> 479
<211> 637
<212> DNA
<213> Homo sapiens

<400> 479
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ccaatggtgt ttacacaact gcagagcagc gtccgaatgc ctacatccca gaagcagatg 120
ccactcttcc tttgccaaaa ccttatggtg ctttggctcc ttttaaaccc agtgaacctg 180
gagccaatat gaggcacata aggaaacctg ttataaagcc agttgaaatc tgaatatgtg 240
aacaaatcca ggcctctcaa ggaaaagact tcaaccaggc ttccttgtac ccacaggtga 300
aaaatgtgag cataatactt ctaatattat tgataagtaa ggtaaccaca attagtcagc 360
aacagagtac aacagggttt ctatttaccc accaactact ataccttca tgacgttgaa 420
tgggacatag aactgtccta catttatgtc aaagtatata tttgaatygc ttatattttc 480
tttttcactc tttatattga gtacattcca gaaatttgta gtaggcaagg tgctataaaa 540
atgcactaaa aataaatctg ttctcaatga agtacggaaa aaaaaaaaaa aaaaaaaaaa 600
aaaaaaaaaa aaaaaaaaaa aaaaaaaggg cggccgc 637

<210> 480
<211> 1889
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (26)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (57)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1295)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1370)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (1844)
<223> n equals a,t,g, or c

<400> 480
aactaagtgg atcccccggg cacatnatgt tgatactgtt cgccatagcg ttgctgntgt 60
gtctgggcga actgacgtgc cagttcatcc tgctgcatcg catcgatttc atcatcgttg 120
tactgatcgc cagaatcgta ctgattgcgc tgggcttcac gggctttttc ttccgccgca 180
cgctgtgagg gcagcttaat accgtaagac gccagttcac gacgagttgg cacgcggata 240
cgtttcggtc gtggcaactg cggaccaatc ccctctttga cctgaggacg cggtccaccg 300
ctatttgcca gactgaagac tggcgcggca acggttgcgg cagccccgtc gccagtgtcg 360
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ctgcaacaga aggtgctttc agcgaagatt tgatcggttc tggttcttta accggttctg 480
gaatcggttg ataccaggcc gcaagttgtt cacgttcacg ggctcgcttc tcttcaactt 540
cttcaaagta gtaaagcggc ggacgcgcgg gttttgtctc ttctacaacg ggttcagctc 600
cacaacaggc tgctgttcaa cgggttgcgs ctgttggtac aacgggytct karcggctgg 660
ctgctgataa gtttgctcag tctggtatgt agactgtgra gcaaaagtgg attgctgctc 720
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gcacggcgtg attcatgctg tttgcccgtg attttcatct tcatactctn cgtcgtcttc 1380
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aacgtcaggc ccgctgccca aacgcagagc agcgcaatag ttccccgct actgtgtagc 1560
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gcaaaccaac aaccgccgac aataatgacg ggaatggtgt aagccattca cgccaaaaat 1800
aaagaacagc gtatctgcca accacgcacc gggcatccca cctnaattat ggataggttc 1860
atgccaggcc gtttgcgacc agctggggt 1889

<210> 481
<211> 493
<212> DNA
<213> Homo sapiens

<220>
<221> misc feature
<222> (453)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (472)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (475)
<223> n equals a,t,g, or c

<220>
<221> misc feature
<222> (491)
<223> n equals a,t,g, or c

<400> 481
taacgatttg tgttgtgaga ggcgcaactg cgatttctgc tgaacttgga ggcatttcta 60
cgacttttct ctcagctgag gcttttcctc cgaccctgat gctcttcaat tcggtgctcc 120
gccagcccca gctkggcgtc ctgagaaatg gatggtcttc acaataccct cttcaatccc 180
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tcccagttcc tcctttgga tgtaccttct cttctgctcc caatatggaa catgtactag 300
cwgttgccaa tgaagaaggc ttttgttcga ttgtataaca cagaatcaca aagtttcaga 360
aagaagtgct tcaaagaatg gatgggtcac tggaatgccg tctttggacc tgggcctggg 420
ttcctgggga attaaaattg ttacagcagc agnggtcaaa cagccaattt tnggncgtaa 480
aactggtgag ncg 493

<210> 482
<211> 473